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# ***JPRS Report***

## **Telecommunications**

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# Telecommunications

JPRS-TPP-92-007

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**International Telecom Bureau Opened in Calcutta**  
92WT0161X *Calcutta THE STATESMAN* in English  
10 Apr 92 p 7

[Text] The Videsh Sanchar Nigam's international telecom bureau of Calcutta was opened at its office at Podder Court on Rabindra Sarani on Thursday. From the bureau, direct communication links will be available with four countries, while two more—the USA and Japan—will be added this month. It offers facilities like international telephone service, international conference telephone, home country direct telephone, telex and fax services.

Mr D.K. Nimal, general manager, VSNL, said that though the city could be linked with all countries, the direct links from the bureau would, especially, help promote international business and industries with prompt services. With the new economic climate where foreign investments were likely, the bureau could be an immense help.

Mr Nimal pointed out that a fullfledged earth station would come up at Halishahar by the end of next year for which Rs 82 crores had been earmarked. The station would help establish worldwide direct links. Two more international telephone exchanges with 1,000 lines each would be added in the next four years to the existing one at Salt Lake with 450 lines.

**France Telecom Establishes Links With Armenia**  
92WT0173F *Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE*  
in English 13 Apr 92 p 4

[Text] A direct link between France and Armenia was inaugurated on April 1st 1992 which means that calls which had been routed through Moscow can now be set up directly between the two countries.

France Telecom is the second operator in the world, outside the United States, to offer direct links with Armenia. Plans are in hand which will enable connections between all of Western Europe and Armenia to be routed through France.

To simplify calling for users, France Telecom says it has kept previous telephone numbers.

The direct calls are carried on 30 digital circuits via the Intelsat satellite system. By way of comparison, this capacity corresponds to the total availability at the beginning of 1989 for telephone services to the entire Soviet Union.

**Charges**

On April 1st France Telecom announced the following rates for international automatic telephone service to Armenia and Sovintel network subscribers in Moscow.

—Full rate (Monday to Friday 7 am to 11 pm and Saturday from 7 am to 2 pm)

—FFr13.22 per minute plus tax (total: FFr15.68), one billing unit every 2.8 seconds.

—Cheap rate (Monday to Friday 11 pm to 7 am and Saturday from 2 pm to 7 am and all day Sunday and Bank Holidays)

—FFr10.86 per minute plus tax (total: FFr12.88), one billing unit every 3.4 seconds.

Sovintel is a US/Russia joint-venture formed to build and operate a digital wireless network in Moscow (see ITI Issues 302 and 318).

**Turkey's TV-1 Program To Be Relayed to Baku 1 May**

NC0105190492 *Baku Radio Baku Network* in Azeri  
1700 GMT 30 Apr 92

[Text] Dear listeners, the Turkish radio and television network's TV-1 program will be relayed to Azerbaijan as of 1 May. The telecasts will start at 0800 Baku time [0400 GMT] and continue until midnight without interruption.

We wish to inform you that Turkey's TV-1 program will only be received in Baku and its environs. You may watch this telecast on Channel 9 on your manual television sets [as heard]. You may [words indistinct] this channel on your remote-controlled television sets.

You may call and inquire about Turkey's current telecasts. The program previews of the telecasts are to be published.

**PTI-TV To Beam Programs From Russian Satellite**

92WT0160X *Calcutta THE TELEGRAPH* in English  
9 Apr 92 p 5

[Text] New Delhi, April 8: The governments of Kerala and West Bengal have entered into an agreement with PTI-TV which has obtained permission to beam programmes from the Russian EKRAM 15 satellite.

The television agency headed by Mr Sashi Kumar has hired a transponder for five years at a cost of \$10 million, to televise programmes on a new channel, scheduled to be launched in September. Test beaming of the satellite begins on April 14.

The EKRAM satellite which has been recently revitalized, has a much larger footprint than Asiasat, used by Star TV and others, covering an area of over 8 million square kilometers.

According to insiders, it is almost four times stronger than Asiasat and will have the capability of covering not just India but the entire continent. At present, a six-hour daily feed is envisaged which can be received on a commonplace interface costing less than Rs 2500 and requiring no special expertise to handle. "We initially

plan to launch special language programmes which will definitely develop into better and interesting items," said a producer in PTI-TV.

Viewers will not have to invest in expensive dish antennae for the hook-up. Moreover, PTI-TV has floated a company, Asianet, which will actually be involved in running the new channel and will be holding equity interests.

While the news agency has the major holding, Gulf-based NRIs' and the two state governments will also be junior partners. The Kerala state government will have a 10 percent stake in the equity holding but the complete details with West Bengal is yet to be worked out. "Other television outfits and media companies can also contribute to the company for making programmes," said an official.

Already the I&B ministry has been sounded which has given a green signal to Mr Kumar and some rounds of talks have been gone through to work out the broad framework. Asianet, when fully operational, will be able to curb China's potential and reduce viewership of Asiasat in the continent.

But Mr Kumar says that "things are still at an embryonic stage and a lot needs to be done." The company hopes to net a yearly turnover of Rs 75 to 100 crore on both hardware and software.

#### 'Direct Satellite Link' of Iran, Tajikistan

NC0706152392 *Tehran Voice of the Islamic Republic of Iran First Program Network in Persian 0330 GMT*  
7 Jun 92

[Text] A few Vision of the Islamic Republic of Iran [VIRI] programs were carried by Tajikistan television via satellite last night. In its headlines, Tajikistan news carried a report on the establishment of a direct satellite link with VIRI. It also carried some clips of a direct relay from Tehran.

The head of the Tajik Radio and Television expressed his pleasure at the establishment of the direct visual link between the cities of Tehran and Dushanbe, saying: We thank God almighty that after nearly 70 years, we have resumed our link with our cultural past.

Tajik television will now be able to receive VIRI programs directly and can take steps to select the programs it wants to disseminate.

It has also been decided that this week, VIRI transmissions will be strengthened and that Tajikistan will be able to receive them via medium wave.

#### Nanjing Firm, Fujitsu: Sino-Japanese Joint Venture

92P60235A *Beijing JISUANJI SHIJIE in Chinese*  
No 14, 8 Apr 92 p 3

[Article by Dai Keqin [2071 0344 0530]: "Sino-Japanese Joint Venture: Nanjing Fujitsu Communications Equipment Ltd. Set Up"]

[Summary] On 16 March in the Great Hall of the People, representatives from Nanjing Wired Telecommunications Plant and Japan's Fujitsu Ltd. formally reached an agreement to establish a joint venture to be called "Nanjing Fujitsu Communications Equipment Ltd." Various leaders from the State Planning Commission, the Ministry of Machine-Building and Electronics Industry, the Ministry of Posts and Telecommunications, the CHINATRON Corporation, Jiangsu Province, and Nanjing attended the signing ceremony.

The new joint venture's main products will be the most demanded products in modern communications networks: fiber-optic communications equipment, including optoelectronic terminals, optical repeaters, monitoring systems, and fiber-optic subscriber loop systems (an economical and fast method for solving the problem of an insufficient number of subscriber lines in a particular area). The joint venture's registered capital is US\$9 million, and gross investment is US\$14.50 million, of which the Chinese side (Nanjing Wired Telecommunications Plant) will put up 60 percent and the Japanese side (Fujitsu Ltd.) 40 percent. The assigned annual output target is 5,500 fiber-optic communications equipment systems. In recent years, Fujitsu Ltd. has been one of China's principal suppliers of stored-program-controlled [telephone] switches and fiber-optic communications equipment, and a partner in cooperative projects involving software development and LSI ASIC's. The formation of this new joint venture—centered around the Nanjing production plant, a backbone enterprise in China's electronics industry—will promote economies of scale in the domestic fiber-optic communications and digital communications network industries.

#### Operators Purchase Capacity on East-West Cable

92WS0444Z *Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE*  
in English 2 Mar 92 p 1

[Unattributed article: "Operators Sign Up for Capacity on East-West Cable"]

[Text] On February 25th representatives of 25 international telecommunications operators gathered in Copenhagen, Denmark to sign a contract to purchase capacity on the first digital fibre-optic cable link to Russia. Approval for the cable to be laid was given in September last year (see ITI Issue 308).

The Denmark-Russian submarine cable, costing around Dkr500 million, will be commercially operational in the Spring of 1993. The cable is being installed by Telecom Denmark, GN Great Nordic and Sovtelecom, Russia's International telecom operator. Sovtelecom represents the telecommunications [words illegible] countries. The cable itself is being supplied by STC Submarine Systems of the UK.

The 1,275 km, 565 Mbit/s link will have a total capacity of 15,360 channels for international telecommunications traffic between Russia and the rest of the world. The system terminates in Albertslund, a suburb of Copenhagen, and Kinglsepp, near St. Petersburg in Russia.

Telecom Denmark and GN Great Nordic will assist in extending the cable via digital microwave links stretching 124 km to St. Petersburg and 810 km to Moscow. COCOM, which controls the export of high-tech goods with possible military application to Eastern Bloc countries, has so far prevented the extension of the cable within Russia.

The telecommunications organizations buying capacity in the Denmark-Russia cable are:

PTT Austria, AT&T (U.S.), MCI International (U.S.), TRT-FTC Communications (U.S.), Sprint (U.S.), Azlenda di Stato per i Servizi Telefonici-ASST (Italy), BESEQ (Israel), BT (UK), Telecom Eireann, Telecom Portugal, Deutsche Bundespost Telekom (Germany), France Telecom, Hungarian Telecommunications Company, PTT Luxembourg, Mercury Communications (UK), PTT Telecom Nederlands, Norwegian Telecom International, Polish Telecommunication SA, RTT (Belgacom), Swiss PTT, Singapore Telecom, Teleglobe Canada, and Telefonica (Spain). In addition, Telecom Denmark and Sovtelecom will have cable channels at their disposal.

#### Helsinki Telephone Signs Agreement With KONTRAX

92WT0173E Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 13 Apr 92 pp 4-5

[Text] Finland's Helsinki Telephone Company (HTC) and KONTRAX Telekom Rt (KT) of Budapest, Hungary, two privately-owned companies, have signed a long-term Cooperation Agreement for the development of telecommunications infrastructure to serve businesses in Hungary.

KONTRAX Telekom PLC, part of the KONTRAX group of companies, was established in May 1991 for the distribution of telecommunications equipment, including PABXs, keysystems and telephone sets.

Although initially created to distribute equipment, KT also harboured ambitions to take an active role in organising and providing telecommunications services in Hungary. Subsequently, in March 1992 it founded the

First Pest-City Telephone Company (EPT) in collaboration with the Hungarian Telecommunications Company (Matav) to focus on this activity. KT currently owns 37 per cent of the shares in EPT. KT also wishes to establish further private telephone companies in order to reach 20 per cent interest in the Hungarian PSTN market. It is planned that 500,000 subscriber lines will be brought into operation within the next five years by KT.

In addition, KT plans to establish data and mobile communications services in Hungary and called on the Helsinki Telephone Company to provide technical and business management consultancy services. Several feasibility studies are underway jointly between KT and HTC in the areas of data communications and mobile services.

It is the intention of HTC, together with a financial partner, to become a shareholder in EPT.

The KONTRAX Group of companies was originally founded in 1987 as a private company for trading in office automation equipment. KONTRAX Telekom PLC and its sister company KONTRAX Office Automation PLC, also founded in May 1991, were both floated on the Budapest Stock Exchange in September 1991.

#### Telecom Telephone, Dataline to Scandinavia, East Europe

92WT0176B Copenhagen BERLINSKE TIDENDE in Danish 19 May 92 pp III-8

[Article by Asbjorn Jorgensen: "Denmark Tele-Port to East Europe"—first paragraph is BERLINSKE TIDENE introduction]

[Text] Light-wave cable has not ended the need for satellite connections. Telecom will be the center for telephone and data lines to Scandinavia and East Europe.

The need for international telephone and data lines in space is so great that Intelsat has submitted an order for seven new satellites.

Intelsat already has 19 satellites. This includes one that was sent up on Wednesday, and the satellite which the U.S. astronauts from the space shuttle Endeavor have just captured and repaired.

"Growth in telecommunications is so enormous, and destined to remain so even after the year 2000, that we must have more satellites and learn to utilize our capacity even better.

"Our need for capacity in space rises by 10-15 percent every year, this despite increasing competitiveness from fiber-optic cable," said John Hampton, vice president of Intelsat.

Hampton, together with 300 other experts and top executives, is in Copenhagen in order to participate in the ninth international conference on digital satellite communications.

The fact that the conference is taking place in Copenhagen is yet another step in the efforts of the Tele Danmark Company's Telecom to make Denmark a hub of telecommunications.

"Telecom cannot by itself undertake satellite technology, but we can take part in influencing development. Therefore we chose to host the conference," said Telecom's Administrative Director Jens Kiil.

Other visible evidence of Telecom's attempt to make Denmark the hub of international satellite communications to Scandinavia and East Europe is the connections the firm has established in recent years with the former Soviet Republics of Lithuania and Moldavia.

Telecom is also behind new light-wave cables to Saint Petersburg and Poland.

#### Danish Telecom To Supply Mobile Phones to Ukraine

92WT0176A Copenhagen BERLINGSKE TIDENDE  
in Danish 16 May 92 pp III-2

[Article by Asbjorn Jorgensen: "Danish Telecom Gets Big Order From Ukraine"—first paragraph is BERLINGSKE TIDENDE introduction]

[Text] Danish Telecom, together with colleagues from Holland and Germany, will build and operate a mobile telephone network in Ukraine.

A year of negotiations between Ukraine's national telecommunications administration and the Tele Danmark company, Telecom, has evolved into a 20 year agreement.

A joint venture company made up of the two parties, including Deutsche Bundespost, Telecom, and Hollands PTT, has received the exclusive rights to operate a mobile telephone system in Ukraine.

Before February, Kiev will have Nordic mobile system NMT 450 [analog] service. In three years, the telephones will be available in Ukraine's five largest cities. And within seven years, Ukraine's 21 largest cities will have service. In the same period, the company will expand to other parts of the country on a purely commercial basis.

"Investment in the first three years alone will amount to approximately 150 million kroner, which will come from capital stock and from loans from, among others, EBRD [European Bank for Reconstruction and Development]," said Telecom's Acting Market Director Carsten Jensby. EBRD is the development bank for Central and East Europe.

Danish Telecom holds the technical leadership in the new company and can count on receiving a large share of the technical work, given its experience with the operationally successful Danish mobile telephone system.

The 20-year exclusive agreement with Ukraine can be extended by 10 year increments later and includes mobile communication in all frequencies. This includes not only the old NMT 450, but also paging, and later, the modern GSM [Global System of Mobile Communication] system which is now under development in West Europe, as well as other coming systems such as the wireless DECT.

Telecom already has extensive installation work in progress in Poland and under the Baltic, and has established a satellite connection with the former Soviet Republics of Lithuania and Moldavia. The attempt to get a foot in the door in Estonia and Latvia failed last fall.

## REGIONAL AFFAIRS

### Telkom Ready To Aid African Regional Networks

92WT0164A Johannesburg *THE WEEKLY MAIL*  
in English 24-29 Apr 92 p 17

[Article by Arthur Goldstuck]

[Text] Getting a phone in Harare, or just getting a phone to work in Gaborone, is a nightmare to people whose livelihood depends on communication.

The decay and collapse—not to mention the absence, in many cases—of telephone systems across the continent presents not only a problem, but also suggests unlimited opportunity for sharp players in the telecommunications field.

One of the hungriest of these players is Telkom, South Africa's state-owned "corporatised" telecommunications service, which is presently beset with criticism over increased rates, the abuse of premium rate "advice" and "personality" lines, and the introduction of new charges for repairs.

It needs to sort out its own problems before it can tackle those of Africa, but it has a firm vision for an interconnected future on the continent.

"In the short term Africa is a bit remote—we have too much to do internally before we can even think about it," says managing director Danie du Toit. "But in the long term we see ourselves as a gateway into Africa. We see ourselves as a vehicle for overseas investors in, for instance, telecommunications equipment. They could use our skills and expertise to assist governments to the north in providing telecommunications services, based on standards and systems that are compatible."

One of the barriers, says Du Toit, is the fact that many countries have chosen systems that are not compatible with their neighbours or other countries in the region. When the systems break down or go wrong, the original suppliers, who may be half a world away, have to be brought out at great expense.

"A very good example is the exchange in Botswana—for some 14 months it was inoperable because it was just too expensive to bring people from overseas to repair it," says Du Toit.

"So it is necessary to form some kind of African alliance in telecommunications...where we can set up standards that are interconnected. Not only does this enable greater ease of installation and maintenance, but we can share in terms of our knowledge. This is our vision for the future."

Even if, say, a Japanese company wanted to set up a system somewhere in Africa, it would probably be easier for them to see Telkom as a kind of gatekeeper: "If they want to provide a service of the standard we're talking about, it would be very expensive for them to set it up

and keep it going here, and also very expensive for the country concerned to import it, so it would be cheaper for both sides to use us a gateway."

"Normally when you talk telecommunications, it's something that goes along with some other developments, like dams or railways or power stations. There are always three commodities: a transport system, a communications network and power distribution—these things go hand in hand, and it might even be necessary to have alliances in our own country to provide these services."

The financial windfall this prospect seems to suggest might be as distant as the vision itself. Most of the countries that would want to benefit from this kind of investment do not have the funds necessary to make it a reality. However, developed countries that would want to provide the facilities in terms of aid packages would probably be looking for the most effective ways of applying the aid. South Africa could be an obvious solution.

"We see this starting out on more of a social responsibility level—we would want to help integrate the economies of Africa more effectively in terms of technology," says Du Toit.

Telkom does not envisage supplying Africa with the technological daydreams that are emerging from the high-tech laboratories of Japan and the United States, but again this depends on how fast it can get these goodies to South Africans themselves.

"These are things that are, at the moment, dependent on our suppliers. They are generated overseas and brought here via those suppliers. Initially our drive is to provide electronic exchange facilities to our existing clients.

"Once we've done that, we can provide all the other services that are available on electronic exchanges. Many of the services we'd like to provide, like electronic banking from home, we can now do where we've got electronic exchanges."

The kind of services that are taken for granted in US cities, for instance, will become a reality for ordinary householders in South Africa, says Du Toit.

One example is tele-conferencing services—including three-person conversations on a private line—which are already available in certain areas but cannot be marketed, since most exchanges are still electro-mechanical and cannot be included.

The next phase would be the science-fiction-turned-reality that is flooding the US and Japan.

## GHANA

### New Weather Radar Installed at Kotoko Airport

92WT0158A Accra *PEOPLE'S DAILY GRAPHIC*  
in English 25 Mar 92 pp 1, 8-9

[Article by Victoria Odoi: "Meteorological Services Department Gets Ultramodern Radar Installed at Kotoko International Airport"]

[Text] An ultra-modern weather radar with a 500-kilometre radius range has been installed at the headquarters of the Meteorological Services Department (MSD) to improve weather forecasts.

The radar, installed by Siemens Plessey Radar Limited, at a cost of 700,000 pounds sterling under the United Kingdom Overseas Development Administration will facilitate the tracking of thunderstorms as well as making qualitative and quantitative precipitation measurement.

The new radar together with the satellite ground receiving systems at the Kotoko International Airport (KIA), will help the MSD to capture some of the damaging storms which sometimes escape detection from the surface-based network.

Furthermore, it will assist the department in its contribution to water resources and air traffic management at the KIA.

Mr. Kwame Peprah, Secretary for Transport and Communications, commissioned the radar yesterday as part of activities marking the World Meteorological Day (WMD) which fell on Monday, 23 March and is being observed under the theme "Weather and Climate Service for Sustainable Development."

Prior to the commissioning, Mr. Peprah observed that the worldwide concern for the environment has placed the MSD in a new light and must therefore, be assisted to provide reliable services.

He said it was against this background that the five-year rehabilitation plan was initiated in 1988 to acquire more equipment and upgrade existing ones to enhance the department's performance to appreciable levels.

It is only when it has been adequately modernised that it can gather reliable data on climatic changes to enable policymakers to plan ahead.

He said since the inception of the rehabilitation programme, government has spent a total of c1.2 billion and appealed to all user agencies to accord the department the support that it deserves.

Mr. Lyndon A. Jones, Logistics Director of Siemens Plessey Radar Limited said, meteorological data is now used by agriculture planners, water resources managers, aviation transport and other essential concerns for both short-term and long-term effective and efficient management.

He said given the unprecedented levels of contamination and probable change in climatic conditions worldwide, his company is gratified to be involved in the provision of the technical equipment and instruments used in measuring and forecasting environmental changes.

In a welcoming address, Mr. J.B. Dankwa, acting Director, MSD, gave the assurance that the department would be capable of performing better with more modern equipment.

He, therefore, appealed to the Ministry to continue with the rehabilitation project to enable the MSD to be fully modernised.

## SENEGAL

### Telecommunications Modernized in 3 Regions

92WT0157A Dakar *LE SOLEIL* in French 31 Mar 92  
p 10

[Article by Ibrahima Ndiaye: "Telecommunications Automated in Three Regions"]

[Excerpts] The dream of rural and urban populations in the Thies-Fatick-Kaolack regions has finally become a reality, now that the telecommunications network for the area commonly called "TFK" has been automated. [passage omitted]

The TFK project was the final installment in the Telecom 2 and 3 program. Its aim was to provide a modern and functional telecommunications infrastructure. The overall project cost of 13.7 billion CFA [African Financial Community] francs was financed with considerable help from the World Bank. This extension and modernization project, one of the largest ever for the National Telecommunications Company of Senegal [SONATEL], comes in the wake of similar projects in the Dakar, Ziguinchor, Kolda, and Tamba regions. On 9 April the network is scheduled to be officially inaugurated in Fatick by the minister for communications.

Accompanied by Samba Sene, head of the engineering department, Mbery Niang, head of the production department, and Mr. Faye of the commercial service, we took a two-day tour of the various project facilities. The Gandoul ground station, first stop on our odyssey, is the real nerve center of the telecommunications system, with many kinds of equipment to provide good-quality service to users.

Some 200 international circuits and 21 direct satellite links have been installed there. Gandoul's transmission equipment supports a very modern telephonic communications network. At Pout, the focus was on rural telephone service, which has an important place in the project. This part of the project cost 860 million and has brought service to several remote localities. The Pout network with its 24 subscriber lines is expandable. The same is true for Tivaouane, where every user has his own

equipment and subscriber meter. The system control equipment is concentrated in Thies and has the capacity to bring 5,120 subscribers into the system.

Taiba, a rural center, is unusual because of its special equipment, which cost 60 million. The industrial plants of Taiba and ICS [Chemical Industries of Senegal] have special lines to handle their enormous needs.

#### Rapid Growth

The 27 September inauguration of the region's telephone exchanges was the first phase of this vast network modernization program. And it has a twofold importance, because Thies is an important transit node for both telephonic and televisul traffic between Dakar and the other regions. The network's modernization has improved the flow of interurban traffic and enhanced system security. Until now, the Thies region with all its industrial and touristic infrastructure was equipped only with a completely saturated analogue [electromechanical] exchange. Today, some 4,000 subscribers in the town of Thies are hooked up to the network, which offers a full range of telecommunications services. SONATEL has also installed emergency backup equipment in all these stations to ensure uninterrupted service 24 hours a day. Even solar energy is utilized. We also took note of the 32-line recorded-announcement equipment and the advances in telephone technology represented by the diversity of equipment.

Our tour group was far from bored at Mbour, where a radioelectric system to connect subscribers was installed to satisfy the heavy demand generated by the town's rapid growth. But it should be mentioned that this is the first time all the studies and follow-up on such a major telecommunications project have been carried out entirely by SONATEL engineers and technicians.

The Popenguine locality that has been incorporated into Mbour has the same technological capabilities, which provide high-quality service to its 16 current subscribers (expandable to 46).

The town of Kaolack, which already has solid experience in this domain, is the site of the most important part of the project. The equipment for the old system has been recycled to increase the capacity of installations at Diourbel and Mbacke. The new network, which has been in operation since 29 October 1991, has a capacity of 3,100 subscribers, expandable to 8,000. According to project director Samba Sene, 15 other localities are also connected to the network. In addition, the localities of Passy, Diakhao, Birkelane, Sokone, and Toubacouta are

scheduled to be automated. The Kaolack network, by the way, is equipped with a fiber optic cable that is the only one of its kind in Africa.

Fatick, the last stop, has no intention of being left behind. The new network, with all necessary support features, finally breaks the region out of its isolation. SONATEL's next project will focus on the northern axis.

#### SOUTH AFRICA

##### Telkom's Undersea Optical Fiber Cable Project

92WT0152A Johannesburg *ENGINEERING NEWS*  
in English 3 Apr 92 p 3

[Article by David McKay: "Undersea Oversea's Project"]

[Text] A large part of the new Telkom budget will be spent on completing the SA-2 undersea optical fiber cable project which aims to provide telecommunication links between Africa and Europe.

Telkom MD Danie du Toit said the company would apportion R260-million—almost half of the cost for the entire project—in order to make 7,768 simultaneous speech and data channels available.

Capital expenditure for the 1992-93 financial year was expected to be R2,141.6-million; recording an increase of 13.73 percent on the previous year, he said.

Telkom planned to install 212 new exchanges as well as initiate some 1,500 cable projects.

The waiting list of 124,000 telephone applicants would be reduced by more than 82,000.

Du Toit announced an extension of the motor-phone service to 15,000 in the PWV area and the extension of data transmission services to 8,000 Diginet and some 1,200 Saponet-P ports.

The company would try to strike a balance between the demand for highly sophisticated services and the competing demand for essential telecommunication services.

From 1 April of this year, Telkom's tariffs will increase by an average of 14.2 percent.

"The good news is that users of public telephones will not pay more because Telkom realises that these clients are financially the worst off under the current economic conditions," du Toit added.

Unavoidable expenses will result in a net increase of R950-million and the proposed tariff increased of 14.2 percent will generate an income of R911.5-million, he said.

**Sino-Japanese Joint Venture: Tianjin-NEC**

92P60273A Beijing JISUANJI SHIJIE in Chinese  
No 17, 29 Apr 92 p 1

[Article by Zhang Xiongwei [1728 7160 0251]: "Another Major Sino-Japanese Joint Venture: Tianjin-NEC Electronic Communications Industries, Ltd., Formed"]

[Summary] Tianjin NEC Electronic Communications Industries, Ltd., Tianjin Municipality's largest Sino-foreign joint venture so far, was formally established on 14 April. Tianjin-NEC is a four-party joint venture consisting of Tianjin's Zhonghuan Computer Co., Tianjin Municipality's P&T Management Office, NEC, and Sumitomo Corp. With a gross investment of US\$64 million and registered capital of US\$32 million, Tianjin-NEC will primarily engage in the manufacture, sales, installation, maintenance, and development of NEC's NEAX61 stored-program-controlled (SPC) digital telephone switching system, with an eventual (planned by 1993) production capacity of 300,000 lines. Planned production for the first six months of this year is 100,000 lines, 70,000 of which are to be sold. The joint venture, based in Tianjin's Computer Industrial District, has a 19,500-square-meter plant, basic construction on which is already completed; completion of all construction is scheduled for the end of this year.

**New Fiber-Optic Cable Technology Certified**

92P60273B Beijing KEJI RIBAO in Chinese  
4 May 92 p 1

[Article by Li Mingqi [2621 2494 0796] and Wang Peilai [3769 1014 0171]: "New Achievements in Nation's Research on Fiber-Optic Technology"]

[Summary] China has just had new breakthroughs in research on fiber-optic technology: the development of a superstrong bundle-tube fiber-optic cable and 300,000-pixel silica optical fiber image-transmission technology by a Northern Jiaotong University research team led by Prof. Jian Shuisheng [4675 3055 3932]. These two achievements recently passed the technical appraisal organized by the Beijing Municipal S&T Commission at the request of the State Planning Commission. The superstrong bundle-tube fiber-optic cable, a now-patented device whose development was a key Eighth Five-Year Plan project, has a tensile strength and compressive strength both exceeding 5,000 newtons, a value higher than that of the comparable internationally available product. The 300,000-pixel silica fiber image-transmission technology has many applications in areas such as industry, national defense, and medicine, and was heretofore manufactured only by Japan. China's manufacturing technique employs domestically existing production equipment throughout.

**Tianjin Imports Fiber-Optic Cable Production Line From Nokia**

92P60288B Beijing ZHONGGUO DIANZI BAO in Chinese 8 May 92 p 1

[Article by Li Zanmin [2621 6363 3046]: "Tianjin Imports Fiber-Optic-Cable Production Line"]

[Summary] On 28 April, a state-of-the-art fiber-optic-cable production line imported by the Tianjin Municipal Electronic Wire & Cable Co. was formally put into operation. Tianjin is one of the three largest optical communications bases determined by the state government, and the Tianjin cable firm's new production line, imported from Finland's Nokia Corporation, represents a major step toward implementation of the state's development plan. The new line has an annual production capacity of 2,000 kilometers of fiber-optic cable, and has been in trial operation for one year, with all performance indicators meeting design targets.

**Shallow-Sea Fiber-Optic Cable System Passes Check**

92P60222A Beijing ZHONGGUO DIANZI BAO in Chinese 30 Mar 92 p 3

[Article by Zhang Bing [1728 0393]: "Nation's First Shallow-Sea Fiber-Optic Cable Communications System Handed Over for Use"]

[Summary] The nation's first shallow-sea fiber-optic cable communications system, developed by various plants and institutes under the CHINATRON Corporation, formally passed design finalization and acceptance check on 24 February, and was thus formally handed over for use. This 32-kilometer, 8.448-Mbps [megabits per second] [DS2 standard] system was completed in December 1990, and after that was trial operated for 13 months. The acceptance check followed various tests performed in January and February this year. Throughout, the system uses domestically made shallow-sea fiber-optic cable, splice boxes, and optoelectronic equipment. The system was one of the pilot optical communications projects of the State Council's Office for Promotion and Application of Electronic Information Systems. Principal technical indicators meet mid-1980's international standards.

**Secure Digital Color TV System Certified**

92P60222B Beijing KEJI RIBAO in Chinese  
5 Apr 92 p 1

[Article by Yu Shenming [0060 5450 2494]: "China Now Has a Secure Digital Color Television System"]

[Summary] The 34-Mbps [megabits per second] secure digital color TV system jointly developed for NDSTIC [National Defense Science, Technology, and Industry Commission] by Beijing Institute of Posts and Telecommunications, the University of Science and Technology

for National Defense, and the Luoyang Institute of Tracking and Communications Technology passed appraisal a few days ago. The system has a digital transmission mode, which replaces the traditional analog transmission mode of older systems. This TV system consists of two basic pieces of equipment: the TV compression coder and the digital encryption device, which can transmit highly secure TV images with picture and sound quality improved [over that of an analog system]. The system is compatible with satellite, fiber-optic cable, and digital microwave transmission media. At the appraisal, several dozen experts from NDSTIC, MMEI [Machine-Building and Electronics Industry], MPT [Ministry of Posts and Telecommunications], and the Ministry of Radio, Film, and Television unanimously judged the new system to be a major breakthrough for the nation's telecommunications modernization, and judged its overall technical performance to be at a late-1980's international level.

#### Domestic Large-Screen Digital Color TV Unveiled

92P60288A Beijing ZHONGGUO DIANZI BAO  
in Chinese 4 May 92 p 3

[Article by Fang Shifen [2075 0013 5358]: "China Develops Large-Screen Digital Television"]

[Summary] An independently designed large-screen digital color TV has been developed by MMEI's Institute 3. On 24 April, a panel of experts conducted a technical appraisal of five prototypes of the model-I digital color TV and appraised their technical performance as matching the international state of the art. Digital TV not only represents a new technology, but a particularly relevant new technology, since it is compatible with HDTV [high-definition television]. The former Zhongdian ["China Electronics"] Group, now the Chinatron Corp., began studying digital TV in 1985 at the request of MMEI. The unit has concentrated its research into a two-phase program: phase I consisted of development of the model-I digital TV, which is a multifunctional, multi-format video-band model with picture-in-a-picture functions, while phase II consists of development of the model-II digital TV, which will have improved image quality and high frequency-band picture-in-a-picture functions. In 1989, 41 units formed the "China HDTV and Digital TV Club," organized development of digital TV and coordinated research into applications of digital technology for improving analog color TV products. The successful development of the model-I digital color TV by MMEI's Institute 3 indicates that the nation's TV product technology has entered a new era.

The model-I digital TV has a 71-cm planar right-angle picture tube, is multifunctional and multi-format-capable (including PAL, SECAM, and NTSC) for both main picture and for the smaller picture-in-a-picture boxes. From one to three picture-in-a-picture boxes can be formed on the screen at any one time, and the position and size of the boxes can be

varied. The model comes with a remote control and digital program pre-selection control. The tuner incorporates digital frequency synthesis technology. Brightness and color are controlled by digital filters. Also, the model-I digital TV has stereo sound.

#### Guangdong Boosts Telecommunications Service

OW20050649 Beijing XINHUA in English  
0618 GMT 20 May 92

[Text] Guangzhou, May 20 (XINHUA)—Southern China's Guangdong Province has been putting more investment into development of its telecommunication service in the past few years.

During 1986 to 1990, the province invested about 4 billion yuan of foreign loans and funds collected from the local posts and telecommunication departments in updating posts and telecommunication facilities, 6.7 times more than in the previous five-year period.

In 1991, Guangdong invested an additional 1.4 billion yuan to build telecommunication projects, or 24.6 percent more than in 1990.

With those investments, the number of telephone lines in Guangdong's urban and rural areas has increased from 249,000 in 1978 to 2.24 million in 1991, the latter accounting for 15 percent of the total number in the nation.

Fourty-nine cities and counties in the province have installed digital telephone systems, enabling people in all the cities and counties in the province to make direct long-distance calls to more than 1,000 domestic cities and more than 190 foreign cities.

The province's open-wire lines are now supplemented by optical fibre cables, micro-wave and ground telecommunication satellite stations.

During the same period, a mobile telecommunication network has covered 26 cities and counties in the province, with 38,000 subscribers, or more than one half of the nation's total.

The province has established the nation's largest pager system in the Pearl River Delta areas and has provided pager service in 80 cities and counties in Guangdong. Pager users now number 430,000, accounting for 28.6 of the country's total.

To meet the growing needs of economic development, the province is building a major fibre optic communication project along its coastal cities. The fibre optic cable will become operational this autumn.

In addition, three other long distance fibre optic communication cables linking Guangzhou with Beijing, Guangzhou with Nanjing, and Guangzhou with Haikou are scheduled to be operational next year.

To catch up with the telecommunication standards of the developed countries, Guangdong posts and telecommunication departments are making a long-term development plan.

According to the plan, Guangdong's telephone exchanges are expected to service 40 million lines by 2010; 48.2 percent of households in the province will have telephones, and mobile telephone users will increase from more than 30,000 now to 1.5 million.

### Guangdong Province To Invest in Telecommunications

92P60241A Beijing DIANXIN JISHU in Chinese  
No 4, Apr 92 p 47

[Untitled news brief by Huang Wenquan [7806 2429 6898]]

[Text] It has been learned from the recently convened Guangdong Province Communications Work Conference that during the Eighth Five-Year Plan the Guangdong Province P&T [authorities] will hasten the pace of telecommunications development. In the five-year period, 8 billion yuan will be spent on fixed P&T assets; newly added municipal and rural telephone exchange capacity will total 2.2 million lines; newly laid fiber-optic cable will total 2,500 km; [new] digital microwave lines will total 3,000 km; newly added long-distance [telephone] lines will total 50,000, the Guangzhou long-distance communications hub will be expanded, and the international telephone output/input office's functions and capacity will be expanded; the Guangzhou international satellite earth station will be renovated; and the Zhujiang River delta mobile telephone network will be extended to the Shantou and Zhanjiang seacoast prefectures.

### Advanced Telephone Exchange in Hainan's Yangpu Zone

OW0405073992 Beijing XINHUA in English  
0707 GMT 4 May 92

[Text] Haikou, May 4 (XINHUA)—An advanced program-controlled telephone exchange with a capacity of 100 lines has just opened to service in the Yangpu Economic Development Zone, Hainan Province.

Hainan is China's largest special economic zone and second largest island after Taiwan.

A local official said the opening of the telephone exchange will enable people in the zone to directly dial to 900 cities in the country and 195 countries and regions in the world.

### Communications Promoted in Eighth 5-Year Plan

92P60216A Beijing ZHONGGUO DIANZI BAO in Chinese 30 Mar 92 p 2

[Article by Mao Xifang [0379 6932 5364]: "Shanghai To Focus on Development of Communications Industry in Eighth Five-Year Plan"]

[Text] The Shanghai municipal government has made a clear decision that the communications industry will be the second pillar (or mainstay) industry to be developed during the Eighth Five-Year Plan and in the final decade of the current century. According to the plan, by the end of the Eighth Five-Year Plan the Shanghai communication industry's [annual] output value should reach at least 5 billion yuan.

In 1991, the Shanghai communications industry's output value was 1.4 billion yuan, double that for the previous year. The technological level and quality of the stored-program-controlled (SPC) [telephone] switches, optoelectronic terminals, and VLSI circuits made in the Shanghai area are in the lead domestically, and have created a situation wherein demand exceeds supply.

During the Eighth Five-Year Plan and in the 10-year period beginning now, the Shanghai communications industry will concentrate on the following nine major projects: annual output of S-1240 SPC switches totaling 2.1 million lines, 200,000 kilometers of optical fiber, 3,000 kilometers of fiber optic cable, 8,000-terminal optoelectronic terminal transmission equipment, 900 MHz mobile communications systems, etc. In order to ensure the implementation of this plan, a Shanghai Municipal Communications Industry Development Leading Group with Shanghai Municipal Party Committee Secretary Wu Bangguo [0702 6721 0948] as group leader has been formed.

### Fuzhou Establishes Mobile Telephone Service With Hong Kong

HK2005002692 Beijing ZHONGGUO XINWEN SHE in English 1520 GMT 19 May 92

[Text] Fuzhou, May 19 (CNS)—A mobile telephone service between Fuzhou and Hong Kong, the longest distance service of its kind in China, started operation on May 17.

Users of the Fuzhou portable telephone network who go to Hong Kong or the territory's users of the CSL Telephone Company's network who come to Fujian have been able to use their mobile phones since May 17 providing some simple procedures are followed with respect to the local telecommunications department. Such a service will create yet closer links between the communications entities of Fujian and Hong Kong.

Fuzhou's portable telephone system went into service last year with the introduction of equipment offered by the U.S.-headquartered Motorola Company. There were over 1,200 users within a year while the Xiamen network boasted more than 800 users. The phone service covers a dozen open counties and cities along the 360-kilometre Fuzhou-Xiamen-Zhangzhou Highway, providing advanced and convenient communications for foreign investors, Taiwan businessmen and overseas Chinese coming to invest in the province.

## REGIONAL AFFAIRS

### East European Telecommunications Market Assessed

92WT0173B Maidenhead TELEFACTS in English  
Mar 92 pp 14-19

[Article by Northern Business Information Staff]

[Text] The transition to liberalized telecommunications in Central and Eastern Europe in the wake of the collapse of the Soviet Union will by no means be smooth and straightforward. Market structures and other forces have yet to fully emerge. As a result, for a period of probably three to five years, development and investment plans will remain somewhat provisional, and will be subject to many transitional regulatory and financial arrangements.

As countries move from Communist totalitarianism toward liberal, market-based societies, they are increasingly recognizing that the development of efficient and widespread public telecommunications is crucial to their fate, and that the free flow of information is essential for both creative economic innovation and pluralist political reform. Although mass broadcasting aided the political and economic changes that have swept Central and Eastern Europe over the last few years, the importance of interactive telecommunications systems in maintaining and advancing these changes has, until recently, been neglected.

Central and Eastern European countries now need to move from the currently restricted availability of basic telecommunications services and virtual nonexistence of advanced services to the development of extensive telecommunications firmly integrated with those of the rest of the world. These will help preserve and continue the growth of liberalization.

Although the central role of communications in modern economic and political development is well established in the market-based economies of the West, no simple model can be transplanted wholesale from the Organization for Economic Co-operation and Development (OECD) to the development of telecommunications in the Central and Eastern European economies.

Within the OECD, regulatory regimes vary, and political, economic, and technological conditions in the countries of Central and Eastern Europe differ not only from those in the OECD, but also from each other. Such variety, however, is entirely compatible with modern telecommunications technologies.

#### Regulatory Trends

A number of countries of Central and Eastern Europe view the European Commission's (EC) Green Paper proposals as a model suitable for their own adoption. In this scenario, the underlying network and the basic

services associated with it—simple voice and telex transmission—may remain public monopolies based on universal access. Value-added service markets (and public data services at different future dates) will be made competitive, with public operators regulated by the relevant public bodies.

The process already underway in some, though not all, of Central and Eastern Europe is aimed at a model similar to that proposed by the EC. Competition now occurs in value-added services, either through franchise awards or joint ventures. In most cases, the ministry responsible for formulating overall policy and regulating competition still has operational responsibility for the public network operator, but is moving toward a separation. In many cases, state-owned operators have already established separate commercial subsidiaries (joint venture or fully owned) for value-added and mobile services.

In the last few years all countries in the region—namely, Bulgaria, Czechoslovakia, Hungary, Poland, Romania and Yugoslavia—have liberalized equipment manufacturing and supply, particularly in subscriber terminal equipment markets. Major effects of this process of liberalization have included greater independence and stature for national network operators and the devolution of manufacturing.

Significant opportunities exist in the provision of telecommunications services, but there are also fundamental policy issues that need to be addressed. The move toward liberal network and service markets is most marked in Hungary, which represented 8.5 percent of the regional market in 1989, Poland, 11.2 percent, and the Czechoslovak Federal Republic, the largest market segment with 37.8 percent. In Romania (23.8 percent), Bulgaria (9.4 percent), and Yugoslavia (9.3 percent), the market is an important—though at the moment less central—element of strategy. In the latter nations, the emphasis remains on state-directed five- and ten-year network development plans with a degree of service competition to be allowed. The market is still not firmly established in all the republics of the former Soviet Union, though it is a newly powerful element in the largest republic, the Russian Federation.

The trend toward separating the operation and regulation of telecommunications in Central and Eastern Europe, however, cannot be as straightforward as in OECD countries. For example, Hungary is perhaps the country most advanced in separating its public network operator from the regulatory agency. In services other than basic voice and telex transmission, the Hungarian Telecommunications Company (HTC) is clearly able to determine price and investment levels largely independently of the Ministry for Transport, Communications, and Water Management. However, though the HTC was due to be partially privatized this year, this has been delayed by complex questions of legal ownership of property nationalized in Central and Eastern Europe after 1945. It also hinges on whether compensation or restitution should be offered to the original owners.

Developments in Czechoslovakia have been delayed by constitutional wrangles between the Czech and Slovak republics. Poland is the only country where a telecommunications law has successfully emerged from parliamentary maneuvering connected with wider political and economic struggles. In Yugoslavia, on the other hand, developments have come to a complete halt with the civil war.

Overlapping responsibilities and capabilities, an organizational legacy of the large, sometimes competing government ministries, also remains a factor. Military and party organizations, as well as public utilities, often had major networks which were more technologically developed than the "public" network.

Due to the massive scale of some individual ministries, decisions still need to be made concerning whether to integrate these networks into the public network or turn them into alternative public networks. Integration would mean strengthening the public network's capabilities, while interconnection could mean relinquishing the existing monopoly public control of the national network. In Hungary, for instance, the ministry has been considering allowing these other networks to develop long-distance public services with the help of foreign capital as an alternative to the HTC's network.

In the grossly undeveloped telecommunications markets of Central and Eastern Europe, however, competition is unlikely to be direct. As a result, franchising systems are being developed that will provide an indirect form of competition, which can help save scarce resources, stimulate investment, and provide a more rapid build-up of infrastructures than centralized state determination.

#### Network Expansion and Modernization

Telephone penetration currently is a low level through Eastern and Central Europe, with a 1990 average of only 12 main lines per 100 inhabitants. Waiting times for connection to the network are also high, with periods of between 12 and 14 years being quite common. As a result, many people do not even bother to request a connection. The quality of connections is also usually low, with countless instances of crossed lines, failed connections, and static interference.

The poor quality of telecommunications in the region is partly the result of outmoded, poorly maintained analog equipment, sometimes installed before the Second (or even the First) World War. Accordingly, breakdowns are relatively frequent compared to networks in OECD countries. The hierarchical structure of the networks also creates bottlenecks when equipment breaks down, and it requires an inefficient excess of capacity because indirect routes cannot be utilized at peak periods.

All the countries of Central and Eastern Europe are now aiming to expand basic service levels to Western Europe's present average—40 per 100 population—by early in the next century. Most are also embarking on

ambitious modernization programs in which two basic approaches are usually adopted, often in some kind of combination:

- The creation of "islands" of increased main line penetration in the major towns and cities;
- The construction of long-distance digital "highways" between (initially) predominantly analog centers.

Adopted in Bulgaria during the 1980s, the island approach may be responsible for that country's relatively high penetration rates compared to most other countries in the region. In Hungary, where the penetration of main lines was one of the lowest in Central and Eastern Europe, this approach was also initially pursued during the 1980s. The island strategy may meet the immediate demand for lines and basic services, and it overcomes an inability to produce/import equipment or to finance large-scale digitization programs.

Although it requires relatively modest equipment and financial commitments, returns are also relatively low with this strategy. It continues to restrain the development of extensive high-quality communication and, therefore, of effective national competition in service markets.

Unless transit switches and trunk lines are digitized, simply adding on lines at the local level also increases network congestion and call failure rates for urban and long-distance connections.

The highway approach attempts to overcome these problems, but defers a response to demand for basic services. Business users can lease lines for connection to the highway once it is in place. Requiring large switches and multiplexing equipment, the highway strategy's initial investments are large, but so also are the tariffs that can be charged once business subscribers get results significantly better than those possible through use of the standard Public Switched Telephone Network (PSTN).

The development strategy adopted by the countries of Central and Eastern Europe has depended upon the extent to which each country's broad objectives are compatible with its ability to gain access to large-scale digital equipment and finance. Hungary, with a largely undeveloped network, is now single-mindedly pursuing the highway approach within a broad strategy of economic and political liberalization. Poland, with its high debt burden, has been pursuing a limited version of both approaches, building digital transit connections in Warsaw and other main cities for big businesses, connected to an international digital link via Denmark.

The Commonwealth of Independent States (the former Soviet Union) seems to be implementing a largely island strategy, combined with an attempt to develop select interconnections to a digital trans-Siberian highway (though the latter has been restricted by the COCOM embargo on 565M bps transmission equipment). It is

perhaps too early to define precisely the development strategies of the other countries of Central and Eastern Europe.

#### Alternative Networks

Most of the countries of Central and Eastern Europe are developing or considering mobile and satellite systems as alternative networks for the provision of services for those subscribers (primarily business and government) able to pay Western tariffs. These networks are invariably being developed in joint ventures between domestic public network operators and foreign partners.

In the short term, mobile networks at 450 MHz are being built up in order to quickly provide services to subscribers in major cities and highways, with US West, a Bell Operating Company, taking a leading role in a number of countries. Satellite networks, particularly for VSAT services, are still being considered in a number of countries.

The experience of OECD countries suggests that while mobile networks may provide economic alternatives for "leap-frogging" existing bottlenecks, they quickly become saturated themselves. Indeed, where mobile networks are operating in Central and Eastern Europe—at high connection and service charges and with expensive terminal equipment—a similar pattern seems to be emerging.

Foreign executives report greater problems meeting rather than finding demand. With base stations unable to be built fast enough to meet existing demand, joint ventures are having to choose between raising prices, maintaining a sizable subscriber waiting list, and lowering service quality. Because the franchise rights to their development are often exclusive, these networks are unlikely to spur direct telecommunications competition in Central and Eastern Europe in the short term. By 1993, however, a number of countries are expecting to develop GSM systems at 900 MHz supplied by two or more operators.

Meanwhile, the low telephone penetration rates throughout Central and Eastern Europe will mean that installation of fiber optic cable and broadband mobile systems could rapidly lead to the development of service markets unconstrained by considerations of the large copper cable investments found in many Western countries.

The development of broadband services, for example, will be greatly encouraged by allowing both telecommunications and television services to be provided down the same line by local network operators, as is being considered in Poland. Such networks could lead to widespread competition in service markets.

#### Interconnection With the West

Successful development of telecommunications in Central and Eastern Europe depends very much, in the short

term, upon extensive integration with the networks of Western countries. The establishment of branch offices in the Central and Eastern European countries by parent firms from the OECD countries will trigger a number of important repercussions:

- The vast majority of calls will be to Central and Eastern Europe rather than from them.
- International traffic will be more profitable than domestic traffic.
- Public network operators in Central and Eastern Europe will benefit from international traffic proportionately more than their Western counterparts.

By offering themselves as transit centers, the countries of Central and Eastern Europe can derive further profit from this situation and help recoup their investments in long-distance communications, most of which currently aim to provide 140M bps transmission rates via long-distance fiber-optic links.

Czechoslovakia, for instance, is building a link between Prague and Bratislava with links to the surrounding countries. In Poland, a new fiber-optic link is being built with Denmark. The most advanced East-West link will be along Hungary's digital backbone. This will connect at the far south with an eventual trans-Siberian link, possibly by way of a North-South leg linking Athens, Belgrade, Budapest, Bratislava, and Kiev.

#### Investment Considerations

Updating the telecommunications systems of Central and Eastern Europe over the next decade has been projected to cost between \$60,000 and \$80,000 million, but the economies of the region are in a poor position to foot the bill for the expansion of their telecommunications networks.

According to the United Nations Economic Commission for Europe, output of goods in 1990 dropped by 11 percent in Eastern and Central Europe and fell 4 percent in the U.S.S.R. Foreign debt looms high in all the countries except Romania, and the institutional infrastructure of banking, stock, and bond markets common in OECD countries is either immature or nonexistent.

As a result, it is now generally acknowledged that the levels of investment required for the expansion and modernization of public networks in Central and Eastern Europe cannot be provided solely by domestic sources. Major obstacles would have existed in the best of circumstances, but the increasing economic deterioration in most of these countries makes the situation critical.

The internal resources of public network operators in the region will play a major part in financing investment. Telephone revenues currently hover at between a fifth and a tenth of the levels attained in Western Europe, even at official exchange rates, and revenues per main line plummet even lower.

In the past, funds for network modernization were paid mainly to indigenous suppliers in domestic currencies, or from state-provided foreign currency reserves. Both these avenues are no longer available, so network operators must attempt to locate new sources of finance. The Hungarian "Village Project" is one of the most imaginative schemes; local communities, along with the HTC—and perhaps foreign investors—will each contribute to the development of (and be joint shareholders in) a local network.

Even governments engaged in the reform process over the last few years have displayed reluctance to allow public operators to raise prices very far due to fears of stoking inflation. To raise outside investment, public network operators are searching for foreign partners to provide finance, capital, and management experience in joint ventures. The tariffs for the services of these joint ventures, which are almost invariably in mobile, data, or advanced telephony, are relatively unregulated compared to those in basic services, which are usually price-capped.

While telecommunications users in Western countries can already access a range of services, their counterparts in Central and Eastern Europe must accept that even basic services are not widely available. In such a context, even in local service markets in the major cities, two or more network operators can coexist without depleting all current and potential demand. In the sector where most of the Central and Eastern European countries are focusing liberalization efforts—advanced network services and mobile telephony—opportunities for substantial profits will exist for many years to come.

It is the existence of such opportunities that make investment in these countries so attractive to foreign investors—despite the myriad obstacles and risks. For domestic network operators, joint ventures and liberalized prices provide not only a strong input of foreign capital, finance, technology, and management experience, which they would otherwise lack, but also provide a strong revenue stream for modernizing the basic network. As a result, foreign partners find fertile ground for forming joint ventures with public operators.

Several of the countries in Central and Eastern Europe are planning to privatize the public operator—as opposed to backing private holdings in joint venture subsidiaries—as a means of raising financing. Privatization in this instance usually consists of a mix of domestic and foreign capital, though the percentages vary on a case by case basis. One advantage of privatization is that it allows the operator to raise financing by borrowing without being constrained by overall government ceilings. This is an important attribute for a sector of such potential growth and profitability.

The ability of public monopoly network operators to operate successfully in a liberalized commercial environment and to become attractive to private investors will largely depend upon their ability to improve efficiency and

productivity. Very low numbers of main lines per employee in the six countries suggest that there is ample scope to raise productivity. Network operators in the region need to become more economically efficient, and in order for this to happen, prices should more accurately reflect costs.

However, this has not been the case. Prices for telecommunications services in the region have traditionally been determined by central price committees, with scant regard for actual costs. Though these countries have introduced some liberalization, it remains to be seen how pricing and/or profits for the various services will be set. Will the prices be capped or left to find their own level?

Dual pricing systems are being adopted in a number of countries. These include free prices in advanced and alternative services, but restricted prices in basic services. It is unclear what barriers will exist to prevent monopoly areas from subsidizing competitive ones. In fact, there seems to be little awareness that such barriers would be required to encourage optimal private investment.

If cross-subsidies between public operators' various services may be required to sustain ongoing investment and development of national networks, cost-based pricing will generally be necessary to attract foreign investors in significant numbers. Tariff rebalancing will be an essential component of cost-based pricing. This, however, will be a drastic change for the region's public network operators because local telecommunications services have traditionally been subsidized by high charges on international calls.

Rebalancing tariffs entails transparency of financial structures, the establishment of distinct operating units, and a true separation between the activities of government regulators and network operators. Service operators would also have to implement strict and comprehensive accounting procedures.

The establishment of such a system in these countries would constitute a fundamental break from the past. Traditionally, telecommunications services subsidized other sectors of the economy through the state budget. Until very recently, for example, the state took 58 percent of profits from telecommunications services in Hungary and 87 percent in Czechoslovakia. If network operators are to be truly independent in the future, they can no longer serve as cash cows for the state sector.

#### Manufacturing

Telecommunications markets in Central and Eastern Europe will need to expand nearly four-fold before the middle of the decade to meet the growth rates required by the network development plans of public network operators. At least 3.5 million lines will be needed to fulfill operator requirements in the next five years. Some 10 million telephones per year until 2005 will be needed

to meet new and replacement demands. By the end of the century, 1.5 million mobile phones will be installed.

Domestic manufacturers will be unable to meet the medium-term levels of demand for terminal and subscriber premises equipment that will take hold when network operators' investment plans start to become realised. In the short term, local suppliers possess neither the technological skills nor the commercial flexibility to provide the digital networking equipment that national operators demand.

Meanwhile, these countries are deploying digital equipment manufactured and supplied from abroad. The overwhelming need to build up the network for business services as a means to stimulate investment in the wider economy, combined with the need to raise the efficiency and technological capabilities of domestic manufacturers, has spurred numerous joint ventures with foreign firms. As economic growth resumes in the area, the same considerations should continue to render the region attractive for foreign investors for some time.

There is some substance to the claims of officials from Eastern and Central European countries that their countries are attractive foreign investment targets due to their populations' technical skills. Major engineering capabilities do exist in the region, including personnel skilled in advanced software and digital technologies.

However, these groups of technically sophisticated personnel are relatively small compared to those in many OECD countries. The mass of engineering personnel boast skills in manufacturing and electrical rather than in computing technologies. Personnel skilled in advanced software and digital technologies in the past have often been confined to specialized academic or military centers, which are relatively removed from the commercial economy. As a result, though the quality of technical capabilities in telecommunications in the region may be high, these countries show weakness in the ability to convert these skills into commercially-viable practices.

The development of a commercial infrastructure in telecommunications is therefore vital for the long-term prosperity of these countries. It is also necessary if Western countries are to secure long-term opportunities in these relatively high-skill, low-wage labor markets.

#### Future Prospects

With the dramatic upheavals of the last few years, the countries of Central and Eastern Europe have entertained innumerable trade and investment offers from Western telecommunications companies. Unless some general framework emerges for coordinating these individual efforts, the danger persists that differing proprietary equipment and network standards could lead to isolated technical "islands" that are neither compatible nor cheap to interconnect. This isolation would not produce low prices for business or residential users and it would delay the integration of these countries with the rest of the world.

The countries of Central and Eastern Europe have, however, recently joined the CEPT and ETSI; these memberships should boost hopes for future network and terminal compatibility. In addition, the Commission of the European Community has already begun several projects aimed at integrating these countries into trans-Community networks. These projects include consultancy and training programs for policy makers and planning staff, telecommunications managers, engineers, and technicians.

These institutional efforts, however, are no substitute for the activities of private companies investing in the area; they can only provide an orderly framework for competition. Such competition will occur only if Western corporations seize the profit opportunities that await them in these newly emerging markets. So far, the signals are encouraging that telecommunications companies are moving in promptly on these opportunities.

## HUNGARY

### Country Profile: Telecommunications in Hungary

92WT0173C Maidenhead TELEFACTS in English  
Mar 92 pp 5-11

[Article by Clare McCarthy, Datapro International]

[Text] Once at the hub of the huge Habsburg Empire, Hungary's territories have now diminished to just 93,032 square kilometers. It is now one of the smallest countries in Eastern Europe, with a population of 10.5 million. Although part of the former socialist COMECON group, in contrast to its neighbors, Hungary has always been economically and commercially more advanced; political liberalization was already well underway when Gorbachev initiated Perestroika. The Hungarian government has long sought affiliation to western institutions. As relations between Hungary and the West improve, telecommunications links are becoming increasingly important, consequently, the Hungarian Telecommunications Company (HTC) has already applied for membership of the CEPT.

In 1991, the Hungarian economy was characterized by conflicting industrial indicators. Industrial output dropped by 10 percent, budget deficit reached Forint (Ft) 10 billion (US \$1 = Ft 63.21)—much higher than expected. Inflation for the first 7 months of 1991 stood at 35 percent, unemployment grew, GDP decreased by 5 percent, and its markets in Eastern Europe collapsed. Nevertheless, there was a positive balance of external trade, the Hungarian currency stabilized, proper payment of debts were made, and a dynamically growing entrepreneurial sector emerged. Foreign investments in telecommunications hit US \$1.5 billion, and the Concession Law established the clear legal and regulatory framework in the telecommunications environment, while also promoting further competition and investment.

According to HTC's 1989 Annual Report, at the end of 1989 the number of main telephone lines stood at just over 916,000, or around 8.7 lines per 100 population. In the capital city of Budapest—where 2 million of the country's population reside and even more work—the number of telephones is lower than in any other capital city in Europe.

At present, Hungary has 17 telephones per 100 population, and 10 telephones per 100 population are mainline. There are more than 650,000 registered applicants for telephones, however, the Magyar Tavkozlesi Vallalat or Hungarian Telecommunications Company (HTC) estimates that the waiting list is in the region of 1.2 million. The current average waiting time is around 12 years, but at the Financial Times Conference on World Telecommunications held in London in December 1991, the Deputy Secretary of State, Bela Doros admitted that some applications are 25 years old.

It is clear that Hungary's standard of telecommunications availability cannot stay on its present course with the advent of the market economy. Existing demand will be compounded by three factors:

- The transition from the centralized, planned economy to the decentralized, market economy;
- The growth of new, small enterprises;
- The presence of foreign investors, who expect the same level of service that they receive in the West, i.e., seamless integration with their international activities.

Consequently, the government ordered the HTC and the Ministry of Industry to develop a long term plan for the national telecommunications infrastructure. The 10-Year Development Plan set ambitious targets including building 3 million fully automated and digital main lines, and reaching a telephone density equal to Western Europe (see Table 1). The technological difficulties of fulfilling this task are small in comparison with the problem of financing this expansion, which has been estimated at US \$7-8 billion.

**Table 1. Development Program Targets**

Connections (thousands)	1990	1995	2000
Main line	958	1,713	2,836
Telex terminals	14	18	22
Data terminals	7	31	72
Mobile telephones	—	50	100
Telephone main density (per 100 population)	9.1	16.4	27.2

*Source: HTC*

Within the long-term plan, the HTC has also outlined the Three-Year Investment Program, which comprises two projects. The Basic Project requires Ft 112 billion (US\$1.5 billion) investment to install a digital overlay network, including a digital backbone network connecting 56 primary nodes via optical cables and digital

microwave transmission. The Complementary or Branch Project requires a further Ft 13.5 billion, with the majority apportioned to developing voice telephony. The HTC will finance the plan and the projects through three channels:

- The HTC—The national telecommunications company is able to provide a maximum of 50 percent of the cost.
- Foreign Investment—In October 1990, the HTC signed loan agreements with the World Bank (US \$150 million) and the European Investment Bank (US \$100 million). There are further negotiations underway with the European Bank for Reconstruction and Development. In order to collect and manage domestic and foreign loans and investments, a joint venture company called INVESTEL has been set up by two Hungarian banks with Irish Telecom.
- Joint Ventures—There are a number of joint ventures with foreign companies including Siemens, Ericsson, Northern Telecom, and US West, for equipment manufacture and service provision.

A series of laws has already been passed for the relaxation of state control of commercial agreements, the withdrawal of profits from the country without penalty, the easing of taxation on profits, and the granting of tax allowances for investments and telecommunications-based service provision. Northern Telecom is one of the first companies to form a joint venture in Hungary to manufacture and supply digital switches to the HTC and private business customers. The venture, which has been formed along with BHG Telecommunication of Budapest and Austria Telecommunication GmbH (composed of Kapsch AG and Schrack Telecom AG), began operating at the start of July 1990.

The legal position of the HTC was highlighted by Bela Doros, the Deputy State Secretary in his presentation at the FT Conference. One important law which affects the regulatory framework is The Law of Concession (May 1991), which he outlined as follows:

"The law defines what assets and activities are in the exclusive monopoly of the State. From the point of view of ownership the logic of the law is that what is exclusive State monopoly cannot be owned by anybody else but the State. The State may, for a limited period, convey such efforts for use or development to a company, or the State may have these assets operated and developed by a company established by the State.

"Activities in the exclusive monopoly of the State may be carried out by State owned companies, in which the State has a majority holding, or by a so-called concessionary company.

"As far as telecommunications is concerned, the national basic network will correspond to the Open Network Provision function. The current view is that HTC should go on operating this network for the time being. Later, depending on which telecom market model the government chooses, it will be decided whether this basic

network will be operated and developed by an exclusive state company, by a company with a State majority holding, or by a concessionary company chosen after competitive tendering."

Consequently, the model of the Hungarian telecommunications market is expected to consist of three sectors: monopoly, regulated competition, and free competition. The monopoly sector will comprise the following:

- The development and operation of the basic network.
- Public telephone services (local, trunk, and regional) possibly in regional form.
- Public radio and TV transmission.
- Telex services.

In the following markets there will be regulated competition, with concession required:

- National switched data transmission;
- National mobile radio telephone;
- National paging.

There will be free competition in value added network services, and terminals and terminal equipment.

#### The PTT Today

Restructuring of the Hungarian PTT, known as Magyar Posta, began in 1989. Magyar Posta retained control of operations and service provision, however, all authoritative and regulatory functions were transferred to the Ministry for Transport, Communications, and Water Management. First-level regulatory issues are the responsibility of the Postal and Telecommunications Inspectorate, but it is under the guidance of the Ministry. The Ministry is responsible for second-level regulatory issues, for preparing the new regulatory environment, and drafting the new Telecommunications Bill (see Figure 1 [not reproduced]).

Following the recommendations of a government commissioned study, in January 1990, the PTT was separated into three independent companies: the Post Office, Telecommunications Company, and the Broadcasting Corporation. The Post Office will remain 100 percent state owned, but the government intends to privatize the Hungarian Telecommunications Company (HTC). Privatization will be handled by the State Property Agency in three phases. The first phase is already complete and Coopers and Lybrand has been contracted to evaluate assets and HTC businesses.

In July 1991, HTC became a 100 percent joint stock company owned by the State and Hungarian banks. Future changes expected are:

- In 1992, HTC will issue shares to both domestic and foreign operators.
- In 1994, shares will be floated and sold on the Hungarian Stock Exchange.

Before privatization and the involvement of private capital can become a reality, the government must

produce a new Telecommunications Bill. It has already amended the Bill of 1964. Consequently, the terminals market was liberalized in 1989, and since 1990, the Ministry has been able to issue licenses to independent companies to offer non-wired telecommunications services, i.e., mobile communications, VSAT services, and paging.

Also in December 1989, an amendment to the 1964 Bill enabled the founding of joint ventures and the introduction of foreign capital. In order to ensure that the state does not lose direct control over the role of telecommunications in state administration, the economy, and state security and defense, the level of foreign ownership in the HTC is restricted to 49 percent of stock, and the HTC must be present in all telecommunications activities.

HTC is already a member of the ITU—and consequently its organizational bodies the CCITT and CCIR—and Intersputnik, COMECON's Postal and Telecommunications Committee, and has applied for membership to Intelsat, Eutelsat, and ETSI. Figure 2 [not reproduced] illustrates HTC's overall structure.

#### The Telephone Network

The Hungarian telephone network has a three-level long distance structure formed to handle traffic between local networks. On the top level of the network are six tertiary (regional) exchanges, which are connected in a meshed network. The second level is formed by 13 secondary exchanges. On the lowest level are 74 primary (local or district) exchanges. According to Bela Doros, there are also "1,000 localities in the country where the telephone traffic is handled by manual exchanges and it is limited to between 08.00 and 14.00 hours."

These exchanges operate in a hierarchical star network. The last choice route at the lower levels are supplemented by high usage direct routes according to traffic requirements. Each higher level transit exchange contains the primary exchange function of its own area, so that the total number of primary areas is 93. Among the regional exchanges, Budapest has a distinct role as the main national transit exchange and also as the international gateway exchange.

The national backbone transmission network is composed partly of 960- and 2700-channel analog systems operating on small coaxial networks, and partly of 1800-channel analog microwave systems. The coaxial and microwave networks can be interconnected at several points, so that shared operation of the circuits and mutual borrowing of free capacities of the cable and microwave networks serves to improve reliability and decrease the opportunities for failures in transmission.

In 1986, digital technology was introduced into the transmission network in the form of 2M bps systems at lower level rural areas, and as junction circuits in Budapest. Work also began on the digitalization of the local trunk network through the installation of 2M and 34M bps systems between local main exchanges. The use of

8M bps systems in the rural network began in 1986. Digital symmetrical cables and microwave systems of 2M, 8M, and 34M bps are increasingly used in local trunk and regional networks. Digitalization of the main exchanges started in 1988. Local and toll exchanges are being developed to form digital islands connected either digitally or using analog transmultiplexers, while 2M bps and 8M bps systems are used in conjunction with symmetrical cables in the rural network, and 34M bps radio.

There are currently 17 telephones per 100 population, and approximately 1 million phone lines in Hungary. HTC estimates that this level will increase to 1.75 million by 1993. The network currently comprises 1 million exchanges. Of these 7 percent are still manually switched, 23 percent use rotary switches over 15 years old, 62 percent use crossbar (up to 20 years old), with just 8 percent digital. HTC estimates that by 1993, the total number of exchanges will increase to 2.22 million, and 37 percent will be digital. Table 2 [not reproduced] summarizes traffic figures.

HTC has awarded contracts for digital switches to Ericsson and Siemens. Ericsson Technika is a joint venture company formed by Ericsson and a Hungarian company called Muszertechnika. Together they will supply 65 percent of the switches and produce software for the AXE switches. The remainder will be supplied by a joint venture called Dunatel comprising Siemens (60 percent) and Telefongyar (40 percent). Telefongyar, which now owns the transmission division of BHG Telecom (another Hungarian telecommunications equipment manufacturer), develops fiber optic PCN equipment. To a lesser extent, the company is also active in computer systems.

Most of the telephone network upgrade will be achieved under the auspices of the Basic Project, which primarily seeks to improve the voice telephony services, however, resources from the project will also help develop non-voice services, such as a packet-switched data service. HTC owns PLEASE, a limited liability company which will operate a Hungarian public packet-switched network, with equipment supplied by Siemens. HTC Project Manager, Dr Roxan Reznak estimates that the capacity of this network is currently around 1,000 lines and is expected to rise to 3,000 by 1993. The first VSAT stations were scheduled for the end of 1991, with an X.400 MHS system due to start in 1992. HTC also intends to introduce a centralized network management system complying with CCITT Telecommunications Network Management principles. Other aims in HTC's *10 Year Development Plan* include:

- Removing the disparity in services between geographical areas and/or subscriber groups, and the fulfilling of a wide range of service requirements;
- Meeting of all new demands for main line connections within one year at the most;
- Achieving total national coverage by a mobile public radio telephone system.

### Mobile Communications

Hungary was the first Eastern European country to inaugurate a national cellular network. The first amendments to the Telecommunications Bill of 1964 were implemented in 1989 to accommodate the formation of WesTel Radiotelefon, a joint venture company owned by HTC and the U.S. RBOC, US West. WesTel offers a 450 MHz analog, cellular network with approximately 3,500 subscribers. The company expects subscriber levels to reach 25,000 by the end of 1992. The system will operate through nine mobile exchanges linked to the national network's six tertiary exchanges, and connected to base stations via microwave links. Initially, the service will be available in the Lake Balaton region, extending west into Miskoloz and the main communications corridor between Budapest and Vienna.

Until 1991, all cellular contracts were restricted to the 450 MHz band. The 900 MHz band was strictly for Warsaw Pact military and defense communications. This band is now open in Budapest, and should be freed up in the rest of the country by the end of 1992. Consequently, HTC will be tendering two GSM digital mobile networks which will be compatible with the pan-European mobile network. The digital system should have 50,000 users by the end of the century.

### Data Communications

A data transmission service was introduced in 1968 through the switched telephone network and as a leased line service through the telegraph and telephone circuits. The duplex mode at a rate of 200 bps and the semiduplex mode at rates of 600/1200 bps were originally most commonly used in the switched telephone network, and rates of 2400 bps on leased lines. Now rates of 2400 bps are widely used in the switched network, and even rates of 9.6K bps are possible in modernized parts of the network. On leased lines, rates of 2400 bps and 9.6K bps are mainly used.

Until the end of the 1970s, the average annual growth in data transmission traffic was 35 percent to 50 percent. By the end of the 1970s both the volume and the quality of data transmission needs were hard or impossible to fulfill using the available technologies. These limits encouraged the then PTT to define the development of a uniform telegraph and data transmission system corresponding to future needs and an up-to-date data network capable of accommodating high-speed transmission. On this basis, the development of telegraph and data transmission services and networks with the following features were elaborated by the Hungarian PTT in 1979:

- Full compliance of both the services and networks with the relevant CCITT Recommendations;
- TDM transmission and switching equipment based on the most up-to-date components;
- Integration of the telegraph and data services provided in different telecommunications networks into one switching system;

- Flexibility in extending the scope of services and facilities;
- Retention of the meshed network structure within six main exchanges.

By the end of the 1970s, computer devices for remote data processing were available in Hungary. Remote data processing had become necessary for more and more users, but the PTT was unable to fulfill the increased demands for direct and leased circuits over traditional telegraph and telephone networks. The establishment of a dedicated data transmission network was required. According to the HTC the number of data stations has rapidly increased between 1985 and 1990. There were 1,498 stations in 1985, 2,364 in 1987, 7,653 in 1989, and in 1990 that figure jumped to 123,223. Accordingly, in 1991 the PTT decided to introduce an NEC NEDIX 510A telex and data exchange, plus associated equipment, in Budapest and to open the public circuit switched data network.

#### Text Services

Until the introduction of data transmission over the telephone network in 1968, the telegraph service represented the only non-voice telecommunications method in Hungary. Telegraph services are provided over telegraph networks based on the basic telecommunications network with separate switching and partially integrated transmission devices. Within this network structure, the HTC provides a public telegraph service and a subscriber telegraph service, including telex and leased circuit telegraph.

Telegraph networks in Hungary are essentially characterized by electromechanical, space division switching with telegraph exchanges of the TW55 type, representing the traditional technologies of the TW39 manufactured by RFT, and by the FDM transmission. The total capacity of the telex exchanges at the start of 1990 was 18,270. Of this number, the SPC exchanges have a capacity of 5,329, almost 30 percent of the total.

Both space division and FDM networks have a meshed structure with six exchanges, where satellite and terminal exchanges are connected in a star-shaped arrangement. International telex connections are established by the international gateway exchange in Budapest, by means of subscriber long distance dialing. Connection to the international public telegraph network (Gentex) is provided by the Gentex exchange in Budapest.

The Hungarian telex network is totally automated. Direct distance dialing (DDD) is used in virtually all outgoing international telex traffic. Telex subscribers in 173 countries can be called from the Hungarian network with DDD. The planned growth rate of the international telex traffic is around 5 percent per annum. Since 1985 the number of telex subscribers has increased from 10,782 to 14,190 in 1990.

The international gateway exchange, which operates in Budapest, has since 1981 been of the SPC/circuit switching type. In addition to being an international

gateway, it also serves as a central office for the telex, telegraphy, and data networks. A second SPC/circuit switching exchange was installed in Budapest in 1990, to operate in parallel.

At the end of 1989, the number of telex stations operating in Hungary was 13,480, up from 12,614 in 1988. There were 2,200 outstanding applications for telex connections at the start of 1989, though the growth in facsimile terminals is expected to result in a decline in telex demand.

In 1985 the HTC started experimental operation of the national Bureaufax service. An international Bureaufax service was introduced in 1987, along with a subscriber facsimile (telefax) service. A national teletex service—2400 bps—of the circuit switched data network—was also introduced in 1987, and an international extension of this service was made in 1988. A public videotex (interactive videotex) service commenced test operation in 1988.

#### Video Services

In 1987, the HTC developed an ad hoc video conference capability. As a service, though, videoconferencing has not yet been introduced. After the development of a Hungarian earth station and the connection of fiber optic links to the West, a service will be introduced on an international basis from Budapest. Value-added network services including videotex, are available in some business sectors.

#### ISDN

The HTC has no specific plans for the development of ISDN services. The digitalization of the network, or at least the implementation of the overlay network, is the necessary prerequisite for the development of future ISDN services. At present ISDN services are available through Internet.

#### The Future

Hungary and its telecommunications infrastructure are in a state of transition. The basic decisions now being considered reflect the cultural and political changes that will influence the structure of the future market, organizations, and the regulatory regimes.

Hungary's ambitious telecommunications network expansion and modernization plans are now well developed. While foreign loans and participation in joint ventures are crucial to the objectives of the 10 Year Development Plan, the regulatory framework must be more clearly defined. According to Nick Williams of Touche Ross Management Consultants, there is still much uncertainty in the telecommunications sector. Mr. Williams noted that "Although telecommunications are being reviewed, many of the plans are frustrated by the lack of clear steer by the government." Nevertheless, Hungary offers one of the more stable governments in Eastern Europe, which is committed to a radical path of

privatization and liberalization, and should therefore, offer an attractive prospect for foreign capital.

The HTC aims to remain a major service provider, even in a future competitive market. The company will therefore give priority to its business users—banks are particularly keen to invest—and use the profitable areas of basic services to subsidize the less profitable area of local calls.

### Draft Telecommunications Law Criticized

92WS0452A Budapest SZAMITASTECHNIKA  
in Hungarian 10 Mar 92 p 3

[Article by Jozsef Mess: "The Telecommunications Law; It Is Time To Connect"]

[Text] Representatives of telecommunications companies and members of the National Informatics Interest Federation of Local Governments (the Informatics Federation) sat down at a conference table on 26 February. They harmonized their positions in connection with the draft telecommunications law and the national telecommunications policy concept offered as a supplement. In addition to the invited self government representatives, the meeting, the host for which was the Muszertechnika [Instrument Technology] Company, was attended by Kalman Katona, the National Assembly representative charged with working on the subject.

Not long ago in Dunaujvaros a few telecommunications companies worked out a common stand which was described as follows by Peter Pecz, business director of the Dunatel Company: "In our opinion the draft law does not satisfy the basic criteria. Before all else a telecommunications law should admit that it is a branch law of the concessions law; that is, it must be made clear to the enterprises under which laws this area falls. Otherwise the enterprises will not be able to compete for concessions in an area.

"It is also questionable how concession fees and prices will be determined. Nor does it clarify the future of monies paid in from here. For example, they certainly cannot be used to manage budget deficits; instead of that they should be returned to the investors. We feel that this could be solved by a property proportional distribution. Thus those investing in this area would share in receipts, and thus in the profits, according to their capital ratio.

"One can also debate with the arguments based on economies of scale. This draft law is directed at maintaining a monopoly or quasi-monopoly situation, in defense of the Hungarian Telecommunications Enterprise. In the case of a free market, they say, there would be no one willing to work in areas which had no business advantages. Well, we can say that our model, the backbone of which is competition oriented, self-regulating operation, can make every area of the country profitable.

"We recommend that a holding company, which will take care of developmental aspects, should bring

together the enterprises providing service. We feel that all this can be realized through harmonization with the self governments."

Tamas Kolossa, president of the Informatics Federation, said that the opinion of the federation was essentially the same as that of the companies, but he called attention to one essential difference. They feel that it is necessary to create a Telecommunications Council, so that more of those affected could participate in working out a national telecommunications concept. This is all the more needed because the present draft law does not reflect any definite telecommunications policy idea and without this, he asked, how can one legislate.

After this, Representative Kalman Katona took the floor, granting in advance that the draft law really needed to be reworked. The government, he said, had asked the committee dealing with this to discuss the draft again and prepare a package of initiatives to modify it. He asked those present for help in this, noting also that the way one should participate in legislation was with concrete, constructive recommendations connected with given points of the law, instead of making broad statements. In his opinion the framework law and the formulation of policy should be separated, because the former is a long-range feature while working out a telecommunications policy concept and harmonizing it with the law will be the task of the appropriate minister.

The draft was also criticized because of its superficiality. Mihaly Dohan, for example, an expert for the Informatics Federation, cited the American and British telecommunications laws as examples; in their extent they are nearly ten times longer than the material submitted as the Hungarian draft law. Mr. Dohan said that the Federation had prepared a model proposal even earlier.

Finally, those present agreed that they would issue two statements, one addressed to the self governments and another intended for the committee preparing the law. In these they would urge the creation of a Telecommunications Interest Harmonizing Forum, which would have the task of developing a real telecommunications concept.

### Demand for Media Frequencies Outstrips Supply

92CH0532B Budapest NEPSZABADSAG in Hungarian  
14 Apr 92 p 4

[Article by Gy.V.: "Waiting for the Media Law; More Applicants Than Frequencies"]

[Text] (From our correspondent) According to the latest data of the Institute of Frequency Management from 7 April, so far 230 applications were received for frequencies to broadcast national, regional, or local radio and television programs, as our correspondent was informed by Istvan Hazai, chief director of the Institute. At the

time they placed an application, the majority of applicants planned to broadcast a regional or national program. After the media law is passed, however, they will also need to submit a bid for available frequencies.

The regulations concerning the protection of personal rights make it unlawful to publish the names of applicants who did not expressly agree to the publication of their names (this will change after the media law is passed). For this reason, the lists published so far contain many gaps. Reliable information has it that so far there were only 24 applications for broadcasting a national program, 14 for television and 15 for radio programs. Regional television broadcasts were contemplated by 61 applicants, regional radio broadcasts by 89.

These data are not final. It is possible that not every application will be renewed in the course of the invitation for bids after the media law has been passed. This is also suggested by the fact that less than half of the registered applicants responded to the latest questionnaire sent out by the Institute of Frequency Management. Of course, new applicants may also crop up.

The applicants cannot rely on easy victory, partially because of the scarcity of frequencies. At the moment, besides those used by the public service stations, there are no frequencies available for other national television programs to be broadcast from ground facilities. On the other hand, satellite transmissions can be received by only a portion of the public. In radio broadcasting, the possibilities are somewhat more favorable: There is room for two full national programs on FM. According to Istvan Hazai, the biggest problem will still be satisfying regional demand; local broadcasting can be solved relatively easily.

The invitation for broadcasting bids and their evaluation will also take a long time. If the media law is passed in the fall at the latest, the first broadcasts can be expected in a year or a year and a half.

## ROMANIA

### Communications Network Modernization Discussed

92WT0154A Bucharest *TRIBUNA ECONOMICA* in Romanian 3 Apr 92 p 4

[Interview with Minister of Communications Andrei Chirica by Mircea Serb; place and date not given: "Communications—A Field Undergoing Consolidation"]

[Text] [Serb] Mr. Minister, please tell us about the present state of telecommunications in Romania.

[Chirica] Actually, the state of telecommunications in Romania is inadequate for the end of the 20th century. It is characterized by a limited number of subscribers, namely 2.4 million, which has increased by only about 200,000, or a gain of 4 percent per year under circumstances in which we should normally show an increase of

15-20 percent every year. There are about 1 million unfilled orders, while it is estimated that the potential demand is for 7-8 million new telephone sets.

In order to strengthen this essential component of the communications infrastructure, an outline program for development has been drafted with major foreign (French) technical aid. After a year of local studies with modern data processing, we have succeeded in devising a coherent program for development up to [the year] 2005, which provides for the installation of 8 million new telephones, new services for important subscribers, and complete modernization of the exchanges and the cable network.

But all this requires major financing with billions of dollars. To be sure there is some foreign financing under way, initiated by the European Bank [EBRD], and more planned for the future.

There is also domestic financing which, through the rates charged, permits some participation in the developmental programs. All these ideas are included in the program the government approved in August 1991, which includes approval of the policies for developing the ideas for financing, both for telecommunications and for radio, TV, and the postal service.

[Serb] What is the state of foreign investments?

[Chirica] Everyone acknowledges the necessity of foreign investments. Retooling and modernizing are absolutely necessary. Important steps have been taken: Two mixed manufacturing companies have been formed in Romania for public telephone exchanges with two of the most important European manufacturing companies, Siemens and Alcatel. Both of them have formed companies with equal production capacities, one in Bucharest and one in Timisoara.

Outfitting has begun in both the factories, and this fall we will have the first public exchanges constructed and installed in the network. A mixed company has also been formed with the Korean Goldstar firm for enterprise (private) exchanges and for rural areas. Contacts have been made, and are almost in the final stage, for production of telephone cables. This activity is continuing.

[Serb] But telephone sets are being imported.

[Chirica] No domestic producer has been found yet who will compete. Therefore there is an imported component and there is also a domestic industrial component that is already involved in mixed companies. There are also some foreign operators who are to perform a number of services jointly with Romanian operators. Cellular radiotelephone transmission is an important field, wherein a partnership contract was recently concluded with Telefonica International-Spania in order to found Telefonica-Romania, a mixed company that will provide the new service of portable radiotelephone transmission.

Moreover the law on radio and television will permit the existence of radio and TV sets and transmitters independent of those of the autonomous administrations. There are already some that are transmitting in Bucharest and in other cities.

[Serb] What can you tell us about the privatizing effort in the field of communications?

[Chirica] The first steps have been taken in that direction. For example, a great many private firms for maintenance of telephone terminal equipment, equipment in enterprises, etc. have sprung up, so that the autonomous administration is no longer the sole supplier of equipment or services. The same is true of designs in the communications field. Of course the infrastructure, the basic network, is still a state monopoly, protecting both the social component and the uniqueness of the network, as it also is in France, Germany, and the European countries in general.

Accordingly in Romania too the Romtelecom administration and the Radiocom administration as well as the Romanian Postal Service have some special rights reserved for them, but only over the basic service (traditional telephone service, telegraph service, postal correspondence, money orders). The new services are already open to competition, while protecting the operators who perform telecommunications services. Moreover the problem of completely liberalizing the terminals, that is the equipment with the customers, arose back in the spring of 1991 (and it was accomplished in autumn). Accordingly everyone can buy a telephone in a city and the administration is required to connect it. But there is one condition: The producer firm must be technically certain that the respective type of equipment is compatible with the national network. Consequently both faxes and telephones or exchanges of enterprises exist and are marketed on the free market.

[Serb] Mr. Minister, please tell us about the raise in fees as of 15 March 1992.

[Chirica] That raise is determined by the convertibility of the money supply [masa monetara]. The delivery prices that affected the telecommunications fees, which were calculated and then negotiated back in February, were set on the basis of the inputs (energy, raw materials and spare parts). Some fees, few in number, are affected.

The main things are the increase in the fee from 100 to 130 lei and within this the fee for the impulses per conversation from 1 to 3 lei. The international fees are up by 25-28 percent, without reaching the values of the fees charged by the corresponding administration for the same connection (for example, a Paris to Bucharest conversation costs much more than one from Bucharest to Paris) at the official rate of exchange. This raise in the fees includes a very small part of the domestic financing of the program to develop telecommunications. For example, the fees for the economic agents are differentiated, while a separate fee is no longer charged for fax machines.

[Serb] Now the problem is arising of a massive but very brief transfer of information, something that can be done only with modern telecommunications networks. What efforts are being made in this direction?

[Chirica] We can assert that no component of life is conceivable without communications. This transfer of information avoids travel by a large number of persons and is therefore economical and rapid, to say nothing of the role of telecommunications in the connections that are established with banks and firms both in Romania and abroad. While on the national level we can mention some kind of uniform telephone network constructed in the last 20-30 years, not much has been done in the international field. Some progress was made in that field last year. For instance, we managed to place three exchanges in operation (two in Bucharest and one in Brasov) giving the subscribers access to the international network from the start, that is they can make automated calls. This has also partly relieved the congestion in traffic among those who speak via command 071 (international traffic has increased by six times in one year, and conversations have increased by minutes) with more modest facilities.

A station for European connections via satellites has been inaugurated, and the older satellite stations have been enlarged. All these efforts being made in the telecommunications field will also develop cooperation and collaboration with foreign firms that want to operate in Romania. Without a modern telecommunications network a foreign firm cannot conduct its activity in Romania. That network must be developed not only in Bucharest but throughout the country, in all cities and even in the rural areas, where agriculture is in great need of communications.

## REGIONAL AFFAIRS

### Telephone Links With Arab States Tested

92AE0306Z Tel Aviv HA'ARETZ in Hebrew  
27 Mar 92 p 9

[Article by Gai Bekhor]

[Text] Following the opening of Israeli telephone lines to Arab countries, Jordan took a practical step yesterday and blocked all lines coming from Israel.

Beginning at 1000, it was no longer possible to call Jordan, the most important Arab state for telephone contact from Israel, because of the family contacts of the Palestinians from the two banks of the Jordan. The Jordanian Minister of Communications, Jamal Al-Sarayirah, announced two months ago that if Israel opened pirated lines to the Hashemite kingdom: "We will behave the same way."

It is still not clear how the Jordanians blocked the lines. Apparently, they blocked the lines of the British telephone company "British Telecom," coming from Great Britain, on the assumption that this European company was the one transferring the direct calls from Israel via London.

Jordan, along with other Arab countries expected to join her, hopes that cutting the British company's connection will force it to immediately stop acting as the contact for the Israeli "Bezek" company, in making calls from Israel to the Arab countries. Two months ago, the American telephone company "AT&T" was supposed to transfer the calls from Israel to 11 Arab countries, but changed its mind when the Arab countries refused to accept this contact.

The HA'ARETZ correspondent succeeded in getting through to Rabat Amon (Amman) shortly before the connection was terminated. Jamal Halabi, head of the American news agency, AP, in Rabat Amon, answered the phone. "Where are you calling from? Israel?" answered Halabi, stunned: "Please let me get to work!" When another question came, he let out a curse and slammed down the phone.

The chief of the Reuters' news agency in Rabat Amon, Jane Araf, explained to HA'ARETZ in a telephone conversation a month ago: "They will explain everything to you in our Tel Aviv office. Because of the sensitivity of the matter, I prefer not to continue the conversation."

The attempt to talk to the Jordanian Information Office, where foreign correspondents receive information from the authorities, also did not go well. "Hello, is this the Information Office?" "Yes." "How do you do. I am calling from the HA'ARETZ newspaper in Tel Aviv...." The phone slammed down.

### "'Arafat Will Arrive Later"

There was no trouble getting through to Tunis, and PLO leader Yasir 'Arafat's office, where they reported that he was not there and his secretary would arrive later. It was the same with the office of the organization's spokesman, Ahmad Ab'd al Rahman. Even after repeated attempts, no connection at all was achieved with Beirut, for the telephone exchange there is in very bad condition. Dialing the number did not even get a dial tone. Only a distant rustling could be heard to let one know that the number had really been dialed.

Dialing Riyad in Saudi Arabia was very easy, and we got through to the editorial staff of the Saudi weekly, AL MAGLA, on the first attempt. The operator explained that at this hour (1000) "Nobody is here." After two hours, someone who presented himself as one of the editors answered. He refused to identify himself by name, and was shocked to hear that the caller was from the HA'ARETZ newspaper in Tel Aviv. He repeated the name "Tel Aviv" twice, then suddenly realized what had happened, and in an angry voice, accused: "You Jews show up everywhere! How in the world did you get here?" and slammed the phone down.

It seems that the direct telephone connection with the Arab countries will mainly help the Palestinians who have family members working in the Persian Gulf, or in other places in the Arab world, or if the dialer has in his hand a telephone number which he has reason to expect will answer. Beyond that, in the Arab world they see in this Israeli connection an illegal infiltration, against international conventions.

Zvi Zerahia reports: We were told by Bezek that if an Arab country wants to stop the direct telephone connection with Israel, it will have to stop the telephone contact with that country that is connecting Israel with the Arab countries. In Bezek, they refuse to reveal which three countries are helping to create the telephone contact with the Arab countries. The assumption is that one of them is Britain.

At Bezek, they added that the company has a legal opinion that there is no infraction against international treaties in the act of handling the direct telephone connection.

The managing director of the company, Yitzhaq Kaul, said that Bezek sees itself bound to create a direct telephone connection with the Arab states, in order to answer the needs of the residents of the territories, and citizens within the green line, for telephone contact with the Arab countries.

## EGYPT

**Mubarak on Developments; Inaugurates Media Projects**

*NC3105105892 Cairo MENA in Arabic  
1015 GMT 31 May 92*

[Excerpts] Cairo, 31 May (MENA)—President Muhammad Husni Mubarak today inaugurated several recently completed media projects on the occasion of the 9th Media Men's Day.

President Mubarak also met journalists, media men, and writers, and honored 32 press and media pioneers. The president and senior intellectuals and writers held an open debate on domestic and international political issues.

During his visit to the radio and television building, President Mubarak opened the new high-power 1,500 kilowatt Cairo Radio Network station. He then heard Information Minister Safwat al-Sharif explain the development of radio transmission in the republic. The minister said there are now seven radio networks, transmitting 300 hours a day—a figure achieved only by the major powers—in 33 languages.

The information minister said radio power in 1981 was 5,605 kilowatts/hour, but now it is 10,808 kilowatts/hour, and the stations now serve 28 networks covering the republic. [passage omitted]

The president then inaugurated the teletext channel and heard al-Sharif explaining that it is the first of its kind in the region, directly transmitting the reports it receives from news agencies. [passage omitted]

President Mubarak inspected the Egyptian Satellite Channel, [ESC] which opened recently. The information minister told him the channel represents a new era, opening its own studio. He said the ESC is the Arab alternative in the world communications revolution and that Egypt is at the heart of the Arab culture. [passage omitted]

**Space Channel To Link With Intelsat**

*NC1405081692 Cairo Arab Republic of Egypt Radio Network in Arabic 1130 GMT 13 May 92*

[Text] Information Minister Safwat al-Sharif said that the Egyptian Space Channel will soon be expanded to link up with the seventh generation of the international satellite Intelsat and other European and Scandinavian satellites. Its transmission will then be able to reach all Arabic-speaking people.

Al-Sharif added that different languages will be introduced on the space channel so that it can express the Arab perspective to the entire world and become a true reflection of the Arab nation.

**Space Channel To Inaugurate New Studio, Live Broadcasts**

*NC0305074792 Cairo MENA in Arabic  
1916 GMT 2 May 92*

[Text] Cairo, 2 May (MENA)—A new working plan has been developed for the Egyptian Space Channel [ESC] programs by which ESC will produce 40 percent of its own programs and select the remaining material from other Egyptian television channels according to its needs.

This was stated today by ESC general supervisor 'Abd-al-Salam Khalil, who said ESC will broadcast its own 60-minute newscast, which will include world and Arab reports as well as Egyptian news of international interest.

He said that the new ESC studio—which is equipped with sophisticated live transmission equipment—will be inaugurated soon. He added that a new fully equipped studio is being built near al-Muqattam to enable ESC to transmit distinctive, high-quality programs on the largest possible scale.

## INDIA

**Minister Interviewed on Telephone Plans**

*92WT0169X Madras THE HINDU in English  
13 Apr 92 p 9*

[Text] New Delhi, April 11—I will never agree to privatisation of telecom services. Except, perhaps, for privatisation of some value added services, I have neither endorsed nor will I endorse the views expressed by some that privatisation of public sector is a remedy for the present economic ills, the Union Minister of State for Communications, Mr. Rajesh Pilot, has said.

Speaking to this correspondent, the Minister said, "If telephone services at the national level were to be privatised, then who will guarantee telephone connections in rural areas. Everyone will go to Bombay or Delhi to skim off profits. I don't think public sector units operating telephone services under the Ministry of Communications like Mahanagar Telephone Nigam Limited (MTNL) and Videsh Sanchar Nigam Limited (VSNL) should ever be privatised."

"Do you know," Mr. Pilot asked, "that even without disinvestment or privatisation we have been able to give a record 7.26 lakh new telephone connections in 1991-92 against a target of 7 lakhs? In 1992-93, we propose to establish a new record by giving 11 lakh telephone connections." Asked as to how could this be done, he said, "people are the same, the public sector units are the same, all it required is motivation. The Officers and Staff of the Department of Telecommunications have done it."

Mr. Pilot said that in just over six months ending March 31, 1992, DOT extended telephone facility to 22,000

villages against the nearly 40,000 villages connected with telephones in the 44 years after independence.

But what about the simultaneous announcement regarding 49 per cent disinvestment of public sector equity on April 8 by the Finance Minister Dr. Manmohan Singh (including telecom sector) in Tokyo and Minister of State for Industry Mr. P.K. Thungon (including offer to foreign parties) in New Delhi?

Mr. Pilot said the "policies being followed now are the same as conceived by Nehru, Indira Gandhi and Rajiv Gandhi. We are not neglecting the public sector. At least the Indian Telephone Industries under the Ministry of Communications has full order book position. The issue of 51 per cent or 49 per cent was there even earlier, but permission was required which took more than a year. Now the Government has only said this permission is not required and liberalisation was thus sought to be confused with privatisation," he said.

He said "India cannot neglect public sector undertakings and the Government will try its best to strengthen them. At the same time, insofar as DOT production departments were concerned they should not feel they had no alternative." Competition was a must and that precisely was the Government's intention under the new liberalisation policy. However, the source of public sector's problems lay elsewhere.

The Communications Minister said when only 10 persons were required for a job in a public sector unit, because of a ministerial push 100 persons should be recruited. Can you imagine this being done in the private sector? How can you expect accountability from public sector undertakings when career bureaucrats become technical heads. There should be some linkage between the CMD (Chairman and Managing Director) and the area of operation.

The views expressed by Mr. Pilot days before the ruling party is to hold its marathon session in Tirupati is not without significance. Further, the fact that some of the younger elements including Ministers getting together in the capital for supposedly pledging their support to the Prime Minister's economic policy has to be seen in this context.

There seems to be a feeling among some members of the Government that wrong signals were being conveyed regarding the future management of public sector. This they felt should be corrected though they were not opposed to the economic liberalisation drive. It was in this context the story of telecom assumed importance.

For instance, the Foreign Investment Promotion Board (FIPB) had under consideration applications of U.S. Multinational Giant, Motorola, with an investment proposal of U.S.\$140 million and from AT&T with a \$50 million proposal. Yet another MNC Ericsson from Sweden wants to invest \$60 million on a switching and transmission project. Germany's Siemens has been talking of a 500,000 line switching project. Interestingly

all of them have made representations to the FIPB, but all of them faced obstructions. In unison they have demanded that they should also be allowed to run telephone services besides manufacturing switching equipment.

But the DOT will not accept any of these proposals nor does it believe in allowing the MNCs run telephone services in the country. They can participate in value added services like cellular and paging and if they want also to manufacture switching equipment. They can also participate in tenders like the one already advertised for cellular and main telephone exchanges. But, they will not be allowed to run the telephone services.

Even in the area of telephone connections, of the 7.26 lakh lines connected in 1991-92, nearly three lakh lines were supplied C-DOT licencees and the balance by ITI which has a collaboration with CIT Alcatel of France.

Interestingly, the World Bank which recently did a sectoral study of Indian telecommunication scene was reportedly informed by its consultants that too many switching technologies may not be necessary for India. The study has, however, been kept under total secrecy and someone privy to that said "the report has already undergone revisions."

### Ministry Proposes Setting Up Broadcasting Panel

92WT0180X *Madras INDIAN EXPRESS in English*  
30 Apr 92 p 12

[Article by Anjali Puri]

[Text] New Delhi—The Ministry of Information and Broadcasting has recommended the setting up of an eight-member Broadcasting Council of India, with a minimum tenure of three years, to oversee, license and regulate its much-talked about scheme for allowing private producers to have independent time slots on the metro channels of Doordarshan and the FM channels of All India Radio in Delhi, Bombay, Madras and Calcutta.

The Ministry is learnt to have prepared a detailed blueprint on this scheme. Other concerned ministries will have their say on it, and Cabinet will have to accept it before it is finally implemented. The Ministry has proposed that it should be implemented through an executive order, to be later replaced by a law.

The scheme, as proposed by the Ministry, empowers the Broadcasting Council to invite applications through a public notice, from "individuals" for leasing out time on TV and Radio channels, to issue licences and allocate time slots to the licencees and review the programmes telecast and broadcast by them.

The only ex-officio members of this proposed Council will be the Director-Generals and Engineers-in-Chief of DD AIR. The proposed Chairman is supposed to be a person of eminence in the fields of media administration, media or mass communication. The other members

are to be drawn from among writers, performing artists, film personalities, media persons, etc.

The scheme, as mooted, empowers the Council to suspend and revoke licences, decide the quality parameters for the programmes on the channels, and redress complaints and grievances against the licencees.

The Ministry has laid down several eligibility conditions for the licencees. The most significant of these is that the licencees must give a written undertaking that they will conform to all conditions specified in the licence and subsequent directives of the Council as well as those of the Ministry itself.

The Ministry has given the government (i.e., itself) a role in the operation of the scheme in other ways too. For instance, it has included a provision that the government can take over, control or manage it in the event of war or calamity. The government will also decide, from time to time, what the licence fee will be, and if there is any doubt on the interpretation of rules, the government will be the arbiter.

The prospective licencees will have to have a proven track record in TV, radio, video, films, etc. They are also required to give evidence of their financial soundness and confirm their willingness to accept the guidelines under which the scheme is operated.

The crossmedia restriction that has been placed on the print media for participation in this channel is that applicants who are interested in making news programmes should not own any newspaper or magazine in circulation in the area covered by the channel for which the application has been made.

Interestingly, the blueprint prepared by the Ministry is learnt to have left open the controversial question of whether Doordarshan will have a presence on the revamped metro channels or not.

It is understood to have merely stated in its proposal that the Central Government would inform the Council from time to time on the availability of time for independent producers on the concerned channel or frequency. The Council would allot time to the licencees and also oversee through DD AIR that technical norms are met.

Among the guidelines proposed for the operation of the scheme is that 20 per cent of broadcasting time will be reserved for programmes that are socially relevant. The AIR code, censorship laws, the copyright act, Election Commission guidelines, etc., will also have to be adhered to.

Among the tasks given to the Council is that it should periodically review the programmes put out by the licencees against its own quality parameters, and give written instructions to licencees whose programmes are found wanting. It should also publish the results of its evaluations.

The Ministry has not specified, in its proposal, how long a license will last. It has only said that the Council may, on repeated infringement of its guidelines, or on non-compliance with conditions in the licence, suspend and revoke the licence. Ordinarily, the licensee will be given a chance to explain before losing his licence—but not if the revocation is considered to be in the public interest.

If the Council finds that complaints against licencees are genuine ones, it can direct licencees to broadcast its findings. In extreme cases, it can order suspension revocation as well.

According to the Ministry's proposal, the Council has the power to renew licences, on specific criteria such as performance, quality rating, proposals on similar themes from other companies and programme requirements. Its own tenure will be at least three years, but there is a provision that it can be extended.

The Ministry has proposed that the metro channel can be networked and also operated singly from some part of the day to cater to the needs of specific cities. Apart from terrestrial distribution of programmes, it has also proposed that they should be uplinked by transponder as soon as the INSAT-2 series becomes operational for a wider viewership for the programmes in India and abroad.

Outlining its policy rationale for introducing this scheme, the Ministry has sounded the alarm bell where satellite and cable are concerned by frankly admitting that the two are taking away viewers from Doordarshan. It says surveys have borne out this fact, and warns that if the trend continues, Doordarshan may not be able to transmit its messages, for lack of an audience.

The Ministry says Doordarshan cannot be expected to provide more entertainment to meet the challenge since it has certain national obligations to fulfill—so, therefore, the opening up of the other channel, to wean Indian viewers away from cable and satellite. The Ministry has also justified the new initiative as a means of providing competition to Doordarshan.

#### Indigenous INSAT-2 To Be Launched

92WT0170X *Bombay THE TIMES OF INDIA*  
in English 24 Apr 92 p 5

[Text] *Bombay, Apr 23*—The first satellite in the indigenously-built second generation INSAT (Indian National Satellite System) series INSAT-2A, was air-lifted to the European Space Agency complex in Kourou in French Guyana yesterday.

The 1,906-kg satellite, packed in a specially-designed container along with the check-out and other test equipment, was loaded on to an IL-76 aircraft chartered by Air-India at Bangalore airport.

The satellite will be launched by the European launch vehicle, Ariane, during the last week of June.

The INSAT-2 spacecraft, which is a multipurpose satellite like the presently operational INSAT-1, will provide telecommunication, broadcasting and meteorological services.

A team of Indian Space Research Organisation (ISRO) scientists and engineers will be leaving for Kourou shortly to prepare the spacecraft for launch.

**Center To Rely on Indigenous News Agencies**

92WT0178X New Delhi *PATRIOT* in English  
28 Apr 92 p 8

[Text] Government has, at present, decided not to take the help of any foreign agency whatsoever for commercial news but instead rely on PTI and UNI for the purpose, Information and Broadcasting Minister Ajit Panja, told the Lok Sabha on Monday, reports PTI.

Responding to the concern expressed by some members on the reported move to allow foreign agencies to operate directly in India, the Minister said this matter has been discussed in detail and "we will rely on our own indigenous agencies."

Government will discuss with both PTI and UNI if they are having any difficulty in providing the economic information and inputs which were very much necessary in view of new liberalised policy, the Minister said.

Mr Panja said Government has started making enquiries on reports that some of the Indian newspapers were approaching foreign television companies for the purpose of having some agreement.

"We have seen it in the newspapers. We have started making enquiries," the Minister told Mrs Malini Battacharjee, CPM and Mr Mohan Singh, Janata Dal.

**Rao Inaugurates New Television Transmitter**

92WT0179A Calcutta *THE TELEGRAPH* in English  
17 Apr 92 p 4

[Text] Tirupati, Apr 17 (UNI)—The Prime Minister, Mr P.V. Narasimha Rao, today called upon Doordarshan to improve its software to ensure better quality programmes.

Mr Rao was speaking after commissioning a Rs.5.92 crore high-power television transmitter at Tirumala, the abode of Lord Venkateswara.

Speaking in Telugu, Mr Rao said though he was aware of the difficulties faced by the Doordarshan authorities, there was scope for improvement. He urged the Union information minister Mr Ajit Kumar Panja, who presided over the function, to pay attention to this aspect.

**Policy on Entry of Foreign News Agencies Told**

92WT0159X Madras *THE HINDU* in English  
30 Mar 92 p 4

[Text] Madras, March 29. The entry of foreign news agencies into the country was not likely now or in the near future, Mr Ajit Panja, Union Minister of State for Information and Broadcasting told press persons here today.

A decision to this effect had been taken at the highest level, he added.

The Minister also ruled out any decision on allowing foreign media until a consensus with national news agencies and newspaper managements was reached.

"Opening up to competition does not mean that we will open up everything" he said adding that Indian news agencies and newspapers would have to open up sometime for competition. He however gave an assurance that not a single newspaper or agency would be allowed to suffer on this account.

He wanted UNI and PTI to open up a special business section. "We have not given enough help to them and once this is done they will be able to stand up to any competition," he said.

The Minister agreed that the Finance Ministry was in favor of a financial daily to be brought out in collaboration with the Financial Times of Britain. The Finance Ministry appeared to be anxious to have up-to-date information from abroad on financial matters.

**Pak. disinformation:** Asked whether the Government had any programme to counter the disinformation campaign by Pakistani TV, Mr Panja said there was no need as it did not pose any danger to India and its culture.

The country had the necessary technology to counter any mischief. If they want to do any mischief, we can do it 2,000 times more. But it was against India's philosophy. We believe in good neighborliness.

The Government was monitoring CNN and Star TV networks, he said.

The Minister said the Government proposed to bring forward during the current session of Parliament a legislation seeking to regularize cable TV and dish antennae for private and commercial use. It would help provide self employment opportunities.

He did not agree with a reporter's remark that Doordarshan was putting out half truths. It was wrong to say so. The telecasting of question hour in Parliament was done only after the video cassettes were cleared by the presiding officers of both the Houses of Parliament. Doordarshan did not censor anything, he said.

**Fund constraint:** Mr Panja welcomed the suggestion for more visuals in TV. The only constraint was funds. Even the recent earthquake in UP was covered only by a

private party for Doordarshan, and went on to say jocularly that as a Minister even he had no power to direct Doordarshan to hire a helicopter to cover that tragedy. If the Finance Ministry provided more funds Doordarshan could give more visuals.

Earlier inaugurating an air conditioned hall got up at a cost of Rs 9 lakhs at the Press Information Bureau (PIB), Mr Panja said the print media in the country was still at an infant stage catering only to five crore people as against 45 crore people reached daily by the TV. Emphasizing the development of modern technology for the quick transmission of news, he wanted more newspapers to come up and reach more people. Otherwise there might be no challenge to the monopoly from the electronic media. However, he was against any rivalry between the electronic and print media and urged for coordination between them.

He appealed to journalists to exercise caution while reporting on sensitive subjects. Quite often 99.9 percent of the news appeared to be correct while 0.1 percent created the danger.

The Minister said the PIB regional offices at Bombay, Hyderabad, Madras and Guwahati had been computerized for quicker dissemination of information and within a month. Lucknow, Calcutta, Bhopal and Chandigarh offices would also get the new facility.

Mr S. Narendra, Principal Information Officer to the Government of India, explained the technological facilities provided by the PIB networks.

Mr T. Kannan, Deputy Principal Information Officer, PIB, Madras, earlier welcomed the gathering.

## LEBANON

### Regulations on Media Operations Outlined

NC2904113092 Beirut Radio Lebanon in Arabic  
0530 GMT 29 Apr 92

[Statement by Information Minister Albert Mansur following a cabinet meeting in Beirut on 28 April—recorded]

[Text] [begin recording] Within the framework of tackling the economic, financial, and living problems here and the media's role in the rescue plan, the cabinet held an extraordinary session today to study the media issue. The cabinet was briefed on the current situation in the audio and visual media, particularly the chaos prevailing in this sector as a result of the de facto situation in which radios and television stations have been broadcasting without government approval. This situation has never happened in any country, even the most democratic ones.

Out of its desire to emphasize its commitment to the freedom of information enshrined in the national accord document, the Constitution, and the laws, and out of its

desire to see that this freedom is exercised within the framework of a multiplicity of views, the freedom of expression, and the objectivity of reporting, the cabinet approved a number of proposals and adopted certain conditions allowing the stations to continue transmitting on the basis of principles and stipulations contained in the current publications law. These principles will be applied to both audio and visual mass media pending the issuance of a new law for reorganizing this sector. The cabinet made the following decisions:

1. The ministerial committee entrusted with studying the plan to reorganize the mass media will be asked to conduct a complete technical and legal study of the legal and illegal radios and television stations. The report should be submitted to the cabinet by 30 May 1992. The committee can enlist the assistance of any experts it wishes.

2. Conditions for temporary transmission until the final report is submitted and the relevant law is issued: In order to allow de facto temporary transmission, as is the case now, and under the penalty of suspension of operation and transmissions by order of the public prosecutor at the Court of Appeals in Beirut, owners of audio and visual mass media institutions must sign an affidavit before the Beirut Appeals Court Public Prosecution within 15 days containing the following:

A. The applicant for a temporary transmission permit must waive any right he might have acquired as a result of working illegally. He will also waive the right to file an appeal of any type whatsoever.

B. This measure shall have no effect on the previous acquired rights by the existing institutions. What is meant by measure here is temporary transmission.

C. Under the penalty of closure, the owner of an institution will not dedicate the institution to:

a. Transmit any news, program, picture, or film which may disturb public security or cause public anxiety; fan sectarian or ethnic passions either directly or indirectly; provoke feelings of discrimination between citizens, sects, creeds, or areas; harm Lebanon's Arab and international relations; criticize, insult, or degrade the heads of fraternal and friendly states, the president of the republic, the speaker of the Chamber of Deputies, the prime minister, and the spiritual leaders; undermine public morals and ethics and public order; directly or indirectly attack the basis of national accord, unity of the country, or the country's sovereignty and independence; and propagandize directly or indirectly for the enemy.

b. Disseminate, transmit, or broadcast any news, program, picture, or film which could constitute one of the publication crimes detailed in the first article of the publications law or which is punishable under the provisions of the penal code.

c. Disseminate, transmit, or broadcast any criticism, insult, defamation, scorn, or lie against an individual or family.

d. Attack individuals or parties or harm them directly or indirectly or attack them outside any objective debate of their views and positions.

e. Disseminate, transmit, or broadcast anything that undermines the integrity of the national currency and the economy.

D. With regard to news and political programs, make a commitment to adhere to objectivity and provide the full truth; treat all views equally and in a balanced manner; respect the intelligence and will of the citizen; and refrain from lecturing and offering guidance, and be content with reporting events and news with total objectivity. In case of a violation, to undertake to transmit the Information Ministry's remarks about the violation in the manner it deems fit, and to give any injured persons the right to respond.

E. The Beirut Court of Appeals public prosecutor will be given the authority to adopt measures against media institutions that violate the above commitment as follows: A warning will be addressed for the first offense; transmission will be suspended for three days for the

second offense; and the institution will be closed for the third offense. Security forces will be asked to implement the final measure. The public prosecutor will have at his disposal the necessary executive body composed of elements from all the ministries—information, interior, defense, and justice—provided a decision for the allocation of manpower is issued by the pertinent minister so the public prosecutor can carry out his duty. [end recording]

## SUDAN

### Omdurman Radio To Use New International Frequency

*NC1505141292 Cairo AL-WAFD in Arabic  
13 May 92 p 6*

[From "The Brothers" page]

[Text] "The Brothers" have learned that Omdurman radio has scheduled a new frequency [not specified] for transmission abroad, which will be put into operation this month. The new frequency will operate from 1000 to 2300 daily, promoting the government's Islamic Front policies and exporting its ideas to the neighboring Arab and African states.

## REGIONAL AFFAIRS

**Brittan Outlines EC Telecommunications Policy**  
*92WT0171A Brussels RAPID DATA BASE in English*  
*19 May 92 pp 1-23*

[Text]

### 1. Introduction

Ladies and Gentlemen,

It is a pleasure to be with you this afternoon and I am particularly pleased that the timing of this ninth address in the series—Competition Policy and Post and Telecommunications—has been so opportune. As you know, just a week ago, the Commission adopted the Green Paper on the development of a single market for postal services, an important document in itself but also significant of the Commission's will to come to grips with those areas of activity in the Community which are the least liberalised.

You are well aware that the postal and telecommunications sectors have received considerable Commission attention over the past several years. The reason for this is quite clear but I think it is important to recall it at the outset.

The European Community is currently engaged in the complex and challenging task of creating a single market on the territories of its twelve Member States and competition policy is a central element in achieving this. Efficient postal and telecommunications services are essential to the success of the single market programme and the providers of these services are in turn direct beneficiaries of market expansion. We are all users of postal and telecommunications services on a daily basis. They account for 3 percent of Community GDP and employ more than 2.5 million people. It is evident that the economic significance of open markets in this area is considerable.

Before turning specifically to the postal and telecommunications sectors, I should like to paint some of the background to the Community's competition policy as it relates to those areas where undertakings enjoy special or exclusive rights within their sector.

### 2. Competition Policy in the Area of Monopolies

It is quite clear from the terms of the Treaty of Rome that the continued existence of monopolies was seen as the exception rather than the rule. National monopolies are contrary to the basic concept of a common market which implies the free circulation of goods and services between the Member States. The provisions of the Treaty which do allow for their continued existence are attempts, to one degree or another, to limit the extent of their application. Of particular interest in the context of the subject of this address is Article 90 of the Treaty,

which I am aware some have likened to an indiscriminate bulldozer but which I prefer to see as a scalpel in the hand of a skilled surgeon.

It is an important provision of the Treaty and is at the one time both permissive and limitative. It clearly establishes that there are limits to the extent and nature of the rights which can be reserved. Member States may not enact laws nor keep existing laws on the statute books if they are in any way contrary to the Treaty rules. Moreover, it goes on to declare unequivocally that the Treaty's competition rules apply to all undertakings entrusted with a service of general economic interest.

At the same time, it permits an exception where the application of the Treaty rules would obstruct the performance of the task assigned to such an undertaking. The net effect of this exception is to relate and limit the special or exclusive rights reserved to an undertaking to those, and only those, necessary to achieve its task of general economic interest. Even then, the interests of the Community in the development of trade take precedence over the rights of the undertaking.

Lastly, and of great significance, Article 90 (3) imposes a duty on the Commission to police the application of this provision. The Commission has no discretion in the matter.

That is not to say that the Commission is a reluctant policeman. The proper functioning of the internal market, which is of benefit to the whole Community, can only be achieved through the correct and timely implementation of the Treaty provisions and the Commission cannot, therefore, be less than vigilant in its actions. And Article 90 (3) provides us with the means to act—the Commission “shall, where necessary, address appropriate directives or decisions to the Member States.”

This the Commission has done in a number of cases. In the telecommunications sector, for example, it has issued directives under Article 90 (3) relating to competition in the markets for terminal equipment and for services, which I will speak about in more detail later. Moreover, the Court of Justice has supported the Commission's decision to employ Article 90 (3) as a basis for taking such action in a case taken by the French Government relating to the terminal equipment directive. It also confirmed that the Commission has far-reaching powers to prevent governments restricting competition by conferring monopoly or other special rights when this is not justified on genuine public service grounds. Armed now with judicial approval, it is inevitable that the Commission will increasingly consider the option of using Article 90 as a basis for examining the activities of those sectors currently under review and of others as yet untouched.

While it is essential that those sectors in which companies enjoy special or exclusive rights be subject to the rules on competition if the internal market is to function properly, the Commission also recognises the importance of basic utilities such as electricity, water, post and telecommunications being supplied universally. The

Commission has stressed on several occasions that they should remain accessible and affordable to all, with good quality of service and security of supply.

The task therefore facing the Commission is to open up competition in these areas while ensuring that the activities of general economic interest can be performed. In responding to this problem, the Community has adopted the dual approach of liberalisation coupled with the harmonisation of standards and quality in order to increase consumer choice and value for money. By looking specifically at the postal and telecommunications sectors, we can see how this has been addressed in practice.

### 3. Telecommunications

Commentators on Community telecommunications policy frequently confuse two areas: Community telecommunications policy and Community competition policy as applied to the telecommunications industry.

Telecommunications policy is based on the power of the Commission to propose to the Council of Ministers any measure which it deems necessary to achieve a common market. This may be started by means of consultative documents—green papers—or policy papers—white papers. On the basis of the comments received, the Commission then proposes draft legislation to the Council of Ministers, through a complex procedure which also involves the European Parliament.

A green paper was adopted by the Commission in 1987 on telecommunications and forms the basis for many of the initiatives taken, and still to be taken, in this sector.

On the other hand Community competition policy is based on specific provisions of the EEC Treaty (Article 85, 86 and 90), entrusting the Commission, in its own right, with the power to tackle restrictive agreements, abuses of dominant positions or measures of the Member States imposing behaviour tantamount to such practices.

The main consequence of the distinction between these two policies is that the Commission will usually follow a twofold approach. It will itself implement existing competition rules, but will work with the Council of Ministers—representing the Member States—to establish a new legal framework for the telecommunications industry in the Community. This approach can best be illustrated by a brief review of the achievements of both policies in the past five years in the areas of equipment and services.

#### a. Terminals Equipment

The first focus of the Community was the terminals market. As you know, Article 30 of the EEC Treaty prevents Member States from hindering the free circulation of goods. The maintenance of the exclusive right of national telecommunications organizations to supply terminal equipment to their "captive" customers was

clearly contrary to this provision. Furthermore, it tied the service to the terminal and a customer could not have one without the other. This was also contrary to the Treaty competition rules. For this reason, in 1988, the Commission issued a Directive under its own powers (Article 90) to abolish these exclusive rights. To date, the directive has been implemented by all Member States, except one, which is in the course of doing so.

While this Directive allows for the free circulation of terminal equipment, it still does not grant the right to connect such equipment to all telecommunications networks in the Community. These networks are in fact technically different. As a consequence, terminal equipment which is type approved in one Member State still needs a type approval in each other Member State to circulate in the Community.

To tackle this problem, the Council of Ministers issued a directive on the mutual recognition of type approvals last year. The Directive provides that terminal equipment which has been type approved under European Standards in one Member State and carries an EC mark may be marketed throughout the Community without further formalities. The effective implementation of this Directive also depends on the availability of European standards and indirectly on the technical harmonization of the networks in the Community.

#### b. Services

Let us turn now to telecommunications services, starting with the landmark Commission decision of 1982 against British Telecom. BT had refused to allow telex messages originating from the European continent to be redirected through private operators in the UK to the US. The Commission considered that such a refusal by an undertaking in a dominant market position, which limited technological progress, violated the EC competition rules.

Taking a wider view, the Commission issued a directive in 1990 abolishing the special and exclusive right to provide telecommunications services granted by the Member States to their telecommunications organizations. At the heart of this Directive was the principle that network providers in a dominant position may not restrict the use of their networks as regards the provision of services by third parties.

However, given the importance of public voice telephony service for the revenues of the Community telecommunications organizations, the Commission allowed the maintenance of exclusive rights for this service in order not to jeopardize the universal service. A review is now under way to see if this is still justified.

The abolition of special and exclusive rights is not in itself sufficient to guarantee genuine competition in the Community because it does not prevent telecommunications organisations, acting by themselves, from restricting competition and does not automatically open

up distinct national markets. We therefore issued "Competition Guidelines" in September 1991, building on the experience gained in the implementation of the competition rules in individual cases, to clarify the obligation of market participants stemming from Community competition rules. Telecoms companies now have a clearer idea of what is and what is not allowed in the way of agreements cooperation arrangements and pricing. In addition, the Council has launched the "Open Network Provision" (ONP) programme to lay down harmonized standards and conditions of access to national networks and has extended to network equipment the rules already in operation for public procurement in other sectors.

#### c. Future Community Policy

The review which we are now carrying out looks at the remaining monopoly rights. It will involve lengthy consultation and the Commission will not take any final decision on the outcome of the review until it is completed. The Commission's assessment will be based on the following considerations:

—Despite what has already been achieved, bottlenecks for trans-European services and networks still remain. For example, Intra-Community tariffs are still excessive. A 4 minute call in France over 100km costs 1.25 ECU. The same call, for the same distance but crossing a French border costs 2.17 ECU, nearly double. Similar figures could be given for the other Member States. The high cost of crossing frontiers is only partially due to the cost of the use of international telephone exchanges.

—On the other hand, it is vital to guarantee a universal service. When monopoly rights are abolished there is a risk that both the former monopoly and the new competitors will concentrate on the most profitable business users, neglecting residential subscribers. The implementation of a harmonised set of trans-European Services is a public service requirement which could be justified. It could, however, be provided in a number of different ways, not necessarily by state-owned monopolies.

In my view, then, the review should focus on voice telephony services and networks. As I have said, public voice telephony was excluded from the 1990 directive's liberalisation of the market because of its importance for revenue generation and the maintenance of universal service. The Commission should now reassess this position, given the growing need for more efficient intra-Community corporate communications and the vastly increased requirement for continent-wide networks in the new European environment. The liberalisation of public voice telephony services between the Member States and of supporting networks as far as necessary to allow for genuine competition may contribute to meeting these needs and requirements.

I do not wish to prejudge the outcome of the review. However, I can say with confidence that the current review will not be the last. In a dynamic and innovative

sector such as telecommunications, the Commission must be prepared to stand back periodically and look objectively at progress made and areas remaining to be explored. In other words, the process launched by the Commission is only at an initial stage and telecommunications users will continue to demand lower prices, wider choice and better services. These will only be supplied to the extent that the regulatory framework allows for competing firms to design new services, to try out new technology and to assess how to provide existing services for a lower cost than the incumbent operator.

#### 4. Postal Services

Much of what I have said as regards competition policy in the telecommunications sector is equally applicable to the postal service, and the experience already gained there will undoubtedly influence our manner of proceeding.

Here again, the Commission has adopted a twofold approach, on the one hand applying existing competition rules and on the other working with the Member States, through the Council of Ministers, to develop an appropriate regulatory framework, the first step being the preparation of the Green Paper on postal services, at the request of the Council.

The emergence of competition has occurred very late in this sector and it remains one of the least liberalised in the Community today. However, the growth of private operators in recent years, especially in the express mail sector, has put the spotlight firmly on national postal authorities and their ability to provide the services their customers require. The Commission has been called upon to examine a series of cases relating to international express mail where postal authorities hindered the performance of services which they themselves were unable to provide to the same degree.

The first substantial complaint concerned the German Bundespost. The Commission found that the Bundespost was trying to apply its monopoly rights over the transport of mail to a whole range of its own services, including its own express service, Datapost. An informal intervention in 1985 led to assurances by the Bundespost that it would accept competition from international couriers in Germany and would not use below cost tariffs to secure a position in the market.

The same year, a similar result was achieved with the French post office, where couriers had been taxed and limited to the Paris area. The Italian post office was found to favour its own express service by requiring couriers to stamp their packages and submit to checks, but followed suit in 1989.

These particular cases represent action against post offices or PTTs to change their behaviour. They were followed by action against two governments, those of the Netherlands in 1989 and Spain in 1990. In the face of resistance, more formal procedures were adopted leading to cease and desist orders.

In the case of the Netherlands, a new Dutch law had fixed minimum tariffs for private couriers and required them to register their prices. It is true that the Dutch government successfully challenged the Commission decision on procedural grounds but the judgement of the Court has reinforced its earlier expressed view that Article 90 is an appropriate basis for the Commission action in the area. In Spain, international express courier services were reserved to the post office alone even though it did not offer the full service which customers could have obtained from other operators. The Commission has also intervened with Denmark, which has agreed to change its postal law as it relates to international express.

In the area of cross-border letters, the focus is currently on competition for bulk business mail. Shipments of reports, statements, advertisements and so on are collected in one country, taken to another, placed in the local mail system and ultimately distributed in that country, the country of origin or a third country. This practice is known as remailing. It combines private and public mail services to achieve the most efficient handling, resulting in choice and value for the users and contributing to the growth of cross-border mail.

The complex issues raised by remailing have been examined, in detail, by the Commission in the context of a complaint from the International Express Carriers Conference against a number of Community postal authorities. The complaint is grounded on two issues. Firstly, the postal administrations concerned agreed to raise terminal dues (the amount paid by one postal administration to another if it sends more international mail than it receives) in a way designed to deter remailing. Secondly, some of these post offices were said to have enforced provisions of the UPU (Universal Postal Union) convention which allows them to obstruct remail.

I cannot go into the details of this case, as we have not yet reached a conclusion, but as matters currently stand the complaints seem to me to merit support and justify the necessary subsequent action.

The Green Paper which the Commission adopted last Wednesday is intended to clear the way for further Community action in the postal sector. At the end of the public debate, the Commission will be in a position to draw up the appropriate proposals for action. And it is certainly my intention to have achieved positive results in this regard before the end of this year.

The Green Paper anticipates that a set of universal services, guaranteeing good quality postal service to all consumers at affordable prices, be defined at Community level. It would allow Member States to confer a set of exclusive rights on national postal administrations in respect of certain services which they alone should perform. These would cover ordinary domestic personal and business correspondence, but with clearly defined limits in terms of weight and price. The scope of these reserved services would have to be strictly proportional to the need

to maintain the infrastructure, which for the time being is a precondition of the universal service. Where Member States can demonstrate that the permitted reserved services are insufficient to meet this need, extensions of the scope of the services granted under exclusive right may be justifiable. The competition rules to deal with any such case are already in existence and ready to test the economic arguments put forward. But I should warn here and now that it will be formidably difficult to argue for special treatment. In the interest of all postal users, it is not my intention to allow over-large monopolies to compensate for lack of competitiveness.

As I have said on previous occasions, I believe that the absolute minimum of domestic services should be reserved for monopoly providers. The aim of the Commission's proposals is to put a ring-fence around those areas reserved for postal authorities. All other areas will lie outside and will be open to free competition. These would include express mail and parcel delivery services, which are already de facto liberalised in most Member States.

However, as you might expect, I would like to focus on the particular market opening measures which have excited the greatest response in the postal world: cross-border mail and direct mail.

The arguments for liberalising cross-border mail are considerable. It is an area where postal administrations currently give poor value as compared to their domestic services. The quality of performance often fails to reach the not very demanding targets for delivery, where they exist. The service is overpriced in order to compensate for delivery costs of incoming mail. Business, which accounts for 80% of total mail, is by far the largest users of cross-border services, often by way of bulk mailing, but it is presently denied the choice and quality of service for which it is willing to pay. In addition, to maintain exclusive rights in this area would, in effect, amount to an extension of national monopolies across borders which is unacceptable in the context of the creation of a single market.

The liberalisation of the direct mail sector is also envisaged. This is not the radical proposal which some would claim. Competition in this area is already tolerated in many Member States. Direct mail is in fact advertising messages sent in bulk, not the unique personal messages traditionally deserving of the special protection provided by the postal administrations. It is a rapidly expanding sector, fuelled by businesses who want choice, value for money and good quality end-to-end service, not currently provided by the majority of Community postal administrations. Users are, typically, in the publishing, insurance, financial services and mail-order sectors, although it is a valuable means for smaller companies to break into new markets, target customers and compete against established brands, without having to establish

branches. The failure to ensure the choice of good quality service would have negative consequences for those businesses relying on direct mail as a marketing technique, would discriminate against businesses established in regions where the postal service is poor and would ultimately deny their customers the same choice as their fellow Europeans. The arguments for liberalisation speak for themselves and they are very persuasive.

Certain postal authorities would maintain that to liberalise these sectors would substantially undermine their ability to provide a universal service. However, one cannot assume that the Post Offices will fail to retain a considerable share of the market. After all, they are already operating in the market, with established networks and a wealth of experience to offer potential customers. The projected growth in these sectors, especially for direct mail, offers considerable promise for any postal operator who can respond to its customers' needs.

In order both to reinforce the universal service and to ensure that the services provided respond to rapidly evolving customer needs, the Green Paper proposes a series of harmonisation measures, which are essential if we want to avoid a "two-speed" Europe developing.

Common rules of access should be applied in all the Member States to ensure that any postal operator, be it a postal administration or private operator, wishing to exercise his right to use the network to provide its services would not be obstructed by unnecessary regulatory or technical barriers.

A common tariffs structure should be established with prices for each service related to the average costs of providing that service. Moreover, the terminal dues system, that is the system of compensation between postal authorities in different countries, should be restructured in order to reflect the real cost of collection and delivery in the different countries.

Of particular importance for postal users, standards for performance must be set, monitored and the results published. Poor performance in the postal sector can have serious consequences for Community infrastructure as a whole and undermine the ability of whole regions to take full advantage of the benefits of the internal market. Moreover, the consumer has a right to value for money and to know what he is buying. This is all the more important for those reserved services where competition is not allowed. Postal administrations cannot enjoy exclusive right without assuming commensurate obligations to perform the services to the highest possible quality.

##### 5. Final Remarks

The proposals in the telecommunications sector, particularly relating to voice telephony, and the postal service, which I have spoken about today, provide a starting point for further liberalisation. We need a short, sharp debate on the substance followed quickly by positive action. Measures will be implemented gradually to allow

Member States the necessary time to make the appropriate adjustments. The policy approach which we have chosen for the postal and telecommunications sectors is a careful balance between liberalisation and harmonisation. In hardly any other policy area do we see such a vivid coalescence of Citizens' Europe and the Single Market.

#### European Consortium Gets EC Support for EDI Interconnectivity Service

92WS0541I Maidenhead TELEFACTS in English  
Mar 92 p 2

[Text] A European consortium comprising Infonet, Swedish Telecom International, Telefonica Servicios of Spain and PostGEM of Ireland has been selected by the Commission of the European Communities to provide a European EDI interconnectivity service under the TEDIS 2 program [Trade Electronic Data Interchange Systems]. TEDIS is run by the EC's DG XIII [Directorate General for Telecommunications, Information Industries and Innovation].

Coordination at Community level for the development work involved in EDI will be provided by the consortium, which "promotes the conditions for a rapid and coordinated expansion of the use of EDI within the Community and EFTA [European Free Trade Association] countries," discouraging the proliferation of closed EDI systems. Partly funded by the TEDIS program, the consortium intends to have a fully operational service later in 1992.

Leader of the consortium, Neil Rafferty of Infonet UK, states that "this platform will allow all European EDI service providers to connect to it, using messaging standards based on EDIFACT and publicly available interface specifications." Infonet is to supply the EDI interconnectivity service software and the end-user software. Swedish Telecom will support an Infonet-based EDI relay service in Stockholm, acting as the "clearing house" for other EDI clearing houses in Europe. A backup relay service center for the consortium will be provided by Telefonica Servicios, a subsidiary of Telefonica de Espana S.A. Irish PostGEM is contributing to the interconnectivity project in terms of software design and product development. Project management will be coordinated by U.K. company, Level-7, an independent information technology consultancy company.

A team led by U.K.-based Applied Network Research Ltd. has been awarded a contract by the TEDIS program to "review the current and probable future developments of EDI in the financial sector at a European level, compare it with developments in the rest of the world and draw conclusions and recommendations of interest to the [EC] Commission, consumers, the major players in the European financial sector and standardization bodies and Member States" (TEDIS Project B11). Other members of the team include: KPMG of Germany, Delahale Consultant of France, the Cranfield School of

Management of the U.K., Minerve Consulting of Belgium, and Omdal Associates of Norway.

### Eutelsat 1991 Results Presented

92BR0300X *Antwerp DE FINANCIËEL-EKONOMISCHE TIJD* in Dutch 8 Apr 92 p 11

[Unattributed article: "Gulf War and East Europe Yield Big Profits for Eutelsat"]

[Text] Last year, television companies intensively used the satellite links offered by the European telecommunications satellite organization Eutelsat for their news coverage of the Gulf war and the events in East Europe. The organization announced in Paris that its 1991 profit increase by as much as 55 percent is partly due to these events.

Last year, the use of Eutelsat satellites for direct television reporting increased by 90 percent. Because Eutelsat gets 67 percent of its overall profit from the use of satellite links by radio and television stations, the events in the Middle East and East Europe had a favorable impact on its operating results.

Eutelsat, whose satellites also support telephone and data links, increased its profit to 925 million Belgian francs [BFr] (up 55 percent); profits over the 1990 amounted to BFr611 million. Turnover increased by 48 percent from BFr5.5 billion in 1990 to BFr8 billion in 1991.

At present, the organization has seven satellites in use. The last one was commissioned last January. Eutelsat, in which 28 European countries participate, intends to launch two more telecommunications satellites later this year.

### European EURET Air Traffic Subprogram Presented

92WT0173A *Paris LA LETTRE HEBDOMADAIRE DU GIFAS* in English 9 Apr 92 p 2

[Text] THOMSON-CSF, coordinator of a European consortium including SIEMENS-PLESSEY (UK), ESG (Germany), NLR (Netherlands), SOFREAVIA (France), ROKE MANOR (UK), INESC (Portugal) and CAPTEC (Ireland), have recently signed a research contract known as SWIFT with the EC Commission. The aim is to design a work station for air traffic controllers within the coming twenty years. ECC will be financing 50 percent of the 5 million ECUS that the SWIFT project will cost while the remainder will be supplied by members of the consortium. The SWIFT project is, itself, part of the larger EURET program which represents a financing of 20 million ECUS. EURET—European Research Programme for Transport—concerns optimization of transportation network exploitation, logistics and nuisance elimination. Subjects to be studied include management of railway traffic, sea traffic and air traffic. Air traffic will be handled by three consortia working on three subjects. The first is the SWIFT

project—Specifications for Working position in future air Traffic control—coordinated by THOMSON-CSF. The second is EURATN—European Aeronautical Telecommunications Network—and involves automated exchanges of air/surface data. The third, AEGIS—Air traffic management European Group for Improvement of Scenarios—will study various air traffic management scenarios foreseeable for the early 21st century. THOMSON-CSF is a member of the latter two consortia. The SWIFT study will last two and a half years. It will contribute to harmonizing the work positions of European controllers and will favor European cooperation in air traffic control.

### Teledata Host Redesign, Expansion Seen

92WT0162B *Copenhagen BERLINGSKE TIDENDE* in Danish 4 May 92 Sect 3 p 4

Article by Asbjorn Jorgensen: "Teledata Buried Because of Fiasco"—first paragraph is BERLINGSKE TIDENDE introduction]

[Text] Teledata, with access to databases and various other programs, has turned into a resounding fiasco and is nearing its demise. But the Danish telephone companies have not given up and are trying again with a new and better system.

Teledata and the EC have something in common. Both have been given up for dead and both have returned from the grave.

Within a couple of weeks the Danish telephone companies in Tele Danmark—primarily KTAS [Copenhagen Telephone Company] and Jutland Telephone—will publish their plans of what Teledata will look like in its new version.

And there will be a big difference. In reality, the old Teledata is not only dead and buried, the system has already decayed. Consequently, Info 24, as the system is called in internal code language, will be completely different from Teledata.

When Teledata's first version went into commercial operation eight years ago, the telephone companies believed that 15,000 subscribers would buy access to the system within two years. And the goal was that by the end of the 1980's—that is, over two years ago—there would be over 100,000 users.

Teledata has 6,000 subscribers. That is one-seventh of what was projected.

As a consequence, the telephone companies have barely marketed the system in recent years. At both KTAS and Jutland Telephone the Teledata division has been downsized, while only the most necessary maintenance tasks have been performed.

"A basic reason for Teledata's fiasco was the switchboard rational. We thought of ourselves as a monopoly

that had to give space to all who had information to offer. That produced all kinds of rates and access words, and the customers had access to all kinds of databases for which they had no use," said Jan Carlsen. He is in charge of Teledata at Jutland Telephone.

An example of the number of unusable databases which Teledata plugged into is the French Minitel system with messages, sex entertainment, and information on theater tickets in Marseille. "In addition, we carried a bunch of standards and that made the system heavy," said Carlsen.

#### Replaced Monopoly

The replacement for Teledata, which came out in its present version in 1988, has been a long time in the making. The telephone companies have long been aware of Teledata's shortcomings. Because of this, Jutland Telephone has given up the plan to install thousands of home terminals for residents in Horsens. KTAS has not followed through on a similar project in Lyngby and Ballerup.

"Naturally we cannot keep the computers operating forever because someone wants to hang on to the old system. So, the customers will be invited to switch over to the replacement, and we will carry the old system until the contracts run out," said Carlsen.

"In general, I feel that after a long and difficult period there is light ahead."

#### Info 24

The primary component in the coming system is the Info 24 (information 24 hours a day), which the telephone companies have been working on for a long time.

How exactly it will be in the end they are not telling before the negotiations are finished sometime in May. But even now it is established that one of the cornerstones of the coming system will be the ISDN net—the new, comparatively cheap telephone network with much higher capacity than an ordinary telephone connection and with a slot for both telephone and data through the same wall jack.

That means that communication between user and data base can work with picture, sound, and text.

The potential for illustration is likely to be an important feature of the replacement.

It is also written in stone that the subscribers will be selected with a careful hand when it comes to what is to be offered through the new Teledata.

#### Looking to Sweden

The system will simply need to operate according to market conditions, and although anyone may offer data services on the telenetwork, it is not necessary to have uninteresting data bases to fill it up.

Finally, it is certain that Info 24, or whatever name it will go by, will also have a private target group. The target group of the present Teledata is business.

All along, the Danes have been casting furtive glances at the Swedish system.

Swedish Teleguide is highly selective in its offering, and irrelevant, frivolous information and sales offers are thrown out.

Consumers can get information from the district, make mail orders, buy vacations, hotel accommodations, theater tickets and more.

The Swedish Teleguide project has set the goal of covering all areas within three years.

The telephone companies will not yet say what the Danish planners' economic requirements will be, for the simple reason that the issue is so sensitive, coming after the loss of a sum in the three-figure million dollar range.

However, according to Jan Carlsen, 30-40,000 users on the national scale is a very good guess as to how the Info 24 will be placed in three years.

#### [Box, p 4]

Teledata provides access to a long series of databases, for executing simple EDP programs and for communication with other users. Equipment required are a computer, a modem, and a telephone jack.

#### France Telecom, Deutsche Telekom Joint Venture

92WS0424D Paris AFP SCIENCES in French  
12 Mar 92 p 15

[Unattributed article: "A Sweeping Collaboration Agreement Between France Telecom and Deutsche Telekom"]

[Text] Paris—France Telecom and Deutsche Bundespost Telekom have just signed a sweeping framework-accord to create a joint venture to serve international businesses. The two carriers announced the agreement in a joint communique that was published 11 March in Paris.

France Telecom and Deutsche Telekom will hold equal shares in the joint venture, which should be formed under the name Eunetcom within three months. The communique indicates that the new company will maintain and operate the international telecommunications networks of the businesses and "coordinate European and/or worldwide data-transmission networks."

These details should spark fresh speculation on the current state of negotiations with British Telecom regarding the French and German carriers' possible investment in Syncordia, a subsidiary of BT.

If the proposed investment did go through, the carriers could acquire shares in Syncordia through Eunetcom.

Indeed, the communique states that "Eunetcom will in the future be able to invest in organizations with similar business aims."

### GN Communications Purchases Rathdown Industries

92WT0162A Copenhagen BERLINGSKE TIDENDE in Danish 5 May 92 p 4

[Text] GN Communications—a daughter company of GN Store Nord—has through GN Investments, Ltd., purchased Rathdown Industries from the British company, Unitech Plc., a firm listed on the stock exchange, for 120 million kroner, GN Store Nord has announced.

Rathdown Industries is Europe's leading producer of inexpensive pay telephones and has production plants in Ascot and Swindon outside of London. The company has 120 employees.

Rathdown and GN Communications will be working closely to strengthen sales and marketing as well as production and product development of a production program that currently includes both inexpensive British pay telephones and GN's own advanced pay telephone systems.

Pay telephones are owned and operated today almost exclusively by franchise firms or public post and telecommunications companies. Increasing liberalization of the telecommunications market is destined to provide opportunities in the future for alternative private operators.

GN believes that there is also a future in the inexpensive pay telephone market for private firms.

### Greek Cypriots Said To Disrupt Turkish Transmissions

NC0306095092 Istanbul MILLIYET in Turkish 30 May 92 p 7

[Kutlay Alan report: "A Greek Cypriot Offensive on Frequencies"]

[Text] Anamur—The frequencies of Turkish Radio and Television [TRT] for the central Mediterranean region and the TRNC [Turkish Republic of Northern Cyprus] have been occupied by Greek Cypriot radio transmitters.

In addition, Turkish language programs aired by Bayrak Radio and Television [BRT] in the TRNC on 94 MHz FM during the past 14 years have recently been disrupted by a stronger Greek Cypriot transmitter on the same frequency. The BRT programs used to be clearly heard in southern Turkey.

Not satisfied with this, the Greek Cypriots have also disrupted TRT's Radio-1 programs, which are relayed on 100 MHz FM by a transmitter on the Atayuntepe height near Anamur.

The governor's office in Anamur has told TRT officials about the poor reception of TRT Radio-1, Radio-2, and

Radio-3 programs, the need for stronger FM transmitters in Anamur, and the frequent cuts in television and radio broadcasting and asked them to solve the problem. The initiative, however, has not yielded any results.

### Nokia To Supply Submarine Fiber-Optic Cable Links

92WS0541F Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 13 Apr 92 p 1

[Text] Nokia Cables of Finland has received two contracts worth FM30 million in total to supply submarine fibre optic cable and accessories for telecommunications links under the Baltic Sea.

Telecom Finland and Swedish Telecom (Televerket) have contracted the company to supply cable for a link between the two countries. Designated SF-S 4, the cable will be equipped with 2.5 Gbit/s line systems, the highest transmission capacity currently available, initially providing 30,720 telephone circuits per fibre pair. The cable will have six pairs of fibres for international traffic which means it can be upgraded to provide 184,320 telephone circuits. The cable will also serve data transmission and TV communications.

SF-S 4 is expected to be ready for service towards the end of Summer 1993, interconnecting Turku in Finland, Mariehamn on Aland island and Nontalje, Sweden. It will be the fourth telephone cable to be installed between Finland and Sweden. The old cables, which were laid in 1927, 1938 and 1952, have already been taken out of service.

The new cable will provide the main route for telecommunications traffic between Finland and Sweden. Today, almost all the traffic is transmitted via microwave links across Arland.

Telecom Finland and Swedish Telecom also plan to implement a second fibre optic cable, SF-S 5, which they hope will be ready for service in the Autumn of 1994.

The second contract calls for Nokia to supply submarine fibre optic cable to form a link between Helsinki, Finland and Tallinn in Estonia. This cable, SF-ES 2, will be installed in the Fall of 1992 and will be the first international fibre optic link to terminate in the former Soviet Union territory.

SF-ES 2 will provide a transmission rate of 34 Mbit/s on two fibre pairs, equivalent to 960 telephone circuits. Transmission capacity on this cable can be expanded when the need arises.

The new cables will be installed by Telecom Finland and Swedish Telecom under the supervision of Nokia. For the laying operations, the Finnish cableship C/S Telepaatti and the Swedish ship C/S Plejel will be used.

SF-S 4 and SF-ES 2, and later SF-S 5, will form an integral part of a larger international telecommunications network planned for the Baltic region.

In April 1991, Telecom Finland, the Ministry of Posts and Telecommunications of Estonia and Swedish Telecom formed the Estonian Mobile Telephone Company to establish a cellular mobile telephone system in Estonia (see ITI Issue 289).

### Philips Launches Fiber-Optic Cable Pilot Projects in Netherlands, FRG

*92WS0492B Heidelberg NET—NACHRICHTEN ELEKTRONIK + TELEMATIK in German  
Apr 92 pp 171-174*

[Article by Norbert Hahn: "Fiber-Optic Technology in Local Network; Alternative and More"—first paragraph is NET introduction]

[Text] While optical fiber was up to now intended for use in transmission channels with high bit rates in national, regional, and local networks, it has now reached private households. In a new development area in Amsterdam and in a pilot project in Nuremberg-Boxdorf Philips has added another 200 subscribers to the public telecommunications network with fiber-optic cable.

Philips is contributing to the Europe of tomorrow with these field tests that are being implemented on this scale for the first time. In the process fiber-optic cable is increasingly replacing copper cable.

### Fiber Optics as Means of Transmission

With the digitalization of the telecommunications infrastructure, fiber-optic cable is increasingly being used alongside copper cable as a means of transmission. This tendency holds true for long-distance and basic telecommunications networks as well as for local network connections. How copper-cable systems are to be replaced by fiber-optic technology in local networks is also under consideration. The implementation of these considerations depends, on the one hand, on the services and applications that will be needed and, on the other, on how economical "fiber-in-the-loop" (FITL fiber optics in local connections) systems are. In connection with this, aside from the elaboration of ideas, emphasis is also being laid on the implementation of pilot projects. Another important aspect is the long planning period of about 20 years for the network sector during which the demand for services over the same period has to be considered.

Even today, in addition to the existing services in some business sectors, there is a need for broadband services such as video conference, CAD systems, and computer-network connections. With the bit rates of up to 2 Mbit/s necessary for these services, the twin-lead copper lines in use in the subscriber connection sector have reached the limits of their capability.

Another need arises from the increase in the number of broadband subscribers. But the services chiefly used by private subscribers (households) are at present telephone, cable television, and cable radio, as well as ISDN [Integrated Services Digital Network] services in the near future.

### Economic Aspect is Essential

As concerns the existing and future need for services, the economic aspect must be very carefully considered. The establishment of a fiber-optic network that extends into households must be comparable with the existing twin-lead copper-cable network in terms of both functions and costs. Copper cable can be obtained for about 20 percent of the price of fiber-optic cable. This difference in price and the cost of the additional equipment required for the "fiber-to-the-home" project to compete with similar network topologies implemented with copper cable.

Multiple use of the fiber-optic network represents the solution to this problem. In an environment of shared applications, there are single-point-to-several-point connections (distribution services) from the communications exchange to the end subscriber and several-point-to-single-point connections in the opposite direction. The single-point-to-several-point connection structure can be effected through time division multiplex (TDM) and the several-point-to-single-point connections through time division multiple access (TDMA). With these, flexible assignment of bandwidths is possible.

### Passive Optical Networks

The individual optical fibers are fed from the exchange through a passive fiber-optic distributor to the distribution point and split up at the junction box. In this way several customers can be individually provided with service. Each customer receives an optical fiber from the distribution point. A TDM signal is transmitted over it from the exchange. The customer's equipment has access to a specific time slot and an assigned signaling channel, which is designated for the reception point in question. Additional interface switching arrangements provide the individual services that the subscriber wishes to have, for example, analog telephone or digital services (ISDN). Digitalized speech or data is retransmitted from the subscribers to the exchange by means of optical TDMA with converging flows of data. These data flows passively overlap one another at the distribution points. The correct sequence is obtained through synchronization of the subscriber's equipment with the rate of transmission from the exchange. At the same time, an interval record—that builds up a delay control in the subscriber's equipment—is utilized so that the exchange recipient can gain access to vacant time slots.

Broadband services are transmitted on a second wavelength. A multiplexer, which serves several subscribers

over twin-lead copper cables, is installed at the distribution point and operates "fiber to the curb," FTTC, (fiber optics right into one's home).

Single-mode fiber losses are very few in comparison with those of coaxial cables. Thus, transmission over a distance of more than 30 km without an amplifier station is possible. Since the bandwidth is also very broad, there are practically no limits to the expansion of program capacity or the implementation of new services.

#### Fiber to the Home

During transmission from the terminal to the subscriber over passive optical networks (PON), telephone and television signals at the exchange terminal are converted into optical signals (E/O) and fed into a single-mode fiber. At the far end, the fiber-optic cable is split up into several fibers by means of a passive optical distributor, each of which fibers leads to a subscriber station. After reconversion (O/E), the signals are conveyed to the subscriber via transfer points.

The distribution rate, that is, the number of fiber connections that can be made by means of passive optical distribution, is limited by the potential optical output. It depends on the kind of transmission that is used for the optical signals.

#### Fiber to the Curb

Because of the high cost of the optical components and/or converters, compared with coaxial-copper systems all FTTH (optical fiber to the home) solutions incur greater expense per transfer point.

With a solution that does not exclude a later switch to fiber to the home and with which the cost per transfer point can be lowered, the optical fiber ends in a junction box with an active distribution point at the curb or at the front of the building. After an O/E conversion, the equipment functions like an amplifier in the B zone of a coaxial-copper network and can serve a total of 70 transfer points. Therefore, this solution is an economical one.

#### Combined Services Lower Costs

The combined use of optical components further lowers the cost per subscriber.

Cable television and telephone make use of different wavelengths and are brought together in the same optical fiber by means of a wavelength multiplex (WDM). After the first distribution operation, the signals are again demultiplexed with a WDM. After the O/E conversion, cable television signals can be fed into a coaxial distribution network. The television signals are split up by a second distributor and relayed to the subscriber's telephone network terminal.

Distributor, WDM, and O/E converter for cable television are housed in a standard junction box. The network

terminals can also be integrated into this box. In that event, the subscriber's telephone is connected through a twin-lead copper cable.

#### Models in Practical Test

Along with the elaboration of ideas for networks and support for standardization studies, it is necessary to test the feasibility of these models in actual practice. Philips has made use of its own research and development departments to translate the ideas into the corresponding technology in pilot projects.

Close collaboration with each of the responsible network operators has enabled Philips to adapt the idea to their individual network and service requirements.

The flexibility of its design proposals as concerns services and transmission capacity as well as the simple, direct integration of standardized distribution systems (television/radio), together with a modular network management, are producing network topologies with a guaranteed future.

#### Amsterdam: 200 Optical Fibers in Homes

The Dutch Post and Telecommunications Office has set in motion a pilot "fiber-to-the-home" project in the new development district of Sloten in Amsterdam. For this purpose, Philips connected 200 households to the terminal located in the telephone exchange via eight passive optical networks (with a distribution factor of 1/32). The subscribers now receive telecommunications services and television and radio programs over fiber-optic cable. A network management system supports all eight networks.

In this field test Philips created a single-mode fiber-optic network that can be efficiently installed and operated with already existing services like telephone and television or radio. In addition, the fiber-optic infrastructure was designed in such a way as to be able to also transmit services that are offered in the future.

The goal of the PON pilot project in Amsterdam was to provide an economical optical network based exclusively on existing services like telephone and television or radio (20 FM-television and 32 DSR [digital sound radio] channels) and to at the same time create a fiber-optic infrastructure that also supports a large number of new services. The FTTH solution was chosen to provide up to 200 private subscribers with services transmitted through eight passive optical networks.

All the signals are fed into the single-mode fiber from the exchange terminal. The latter is housed in the local telephone exchange. The signal reaches two underground distribution points via two passive optical distributors. From there on groups of 30 subscribers each are then provided with services. The network terminals located with the subscribers have access to the appropriate time slots of the time division multiplex signal (20.48 Mbit/s). Television and radio programs are transmitted through

the same fiber-optic network on a second wavelength. The application of FM modulation technology to these services provides a high passive distribution factor. Because of this, exchange terminal costs are split up among a large number of subscribers.

#### Nuremberg: 200 Local Fiber-Optic Lines

The German Federal Post and Telecommunications Office is also planning to conduct several field tests in Germany to develop a network standard for local lines (fiber in the loop—FITL) that will provide a suitable infrastructure with a guaranteed future. The Opal 6 system was installed in Nuremberg in September 1991. It is the first passive optical network in Germany. As with the Amsterdam project, 200 subscribers are hooked up to the system. The connections are divided up between two passive radial networks (with a distribution factor of 1/32). POTS [Plain Old Telephone Service] (analog telephone service), ISDN, and Datex-P are among the telecommunications services that are available. Aside from these, the complete cable-television program is offered with a reduced distribution factor. A network management system is also in existence in connection with this.

The network terminal group, with an increased channel capacity of 2 Mbit/s, is housed either with the user (in larger buildings) or at an external distribution point. In the latter case, the existing copper-coaxial-cable infrastructure can be used. The transmission of television and radio signals differs slightly from that of the Amsterdam solution. Amplitude-modulated television signals are required for full cable-television transmission capacity and this leads to a reduced passive distribution factor of about one-eighth.

#### Guaranteed Alternatives for Future

In the years to come fiber optics will take over communications networks in all sectors. New homes are in part being hooked up with the FTTC technology. In future it will be possible to provide subscribers with dialogue and distribution services via fiber-optic cable. One's own video programs can also be retransmitted to the exchange, from which they reach the other subscribers along with their dialogue services via the same fiber-optic cable.

In view of the long life, more than 20 years, and the high investment cost of local networks, telecommunications administrations and network operators are looking for alternatives to the existing copper-cable networks with a guaranteed future for dialogue as well as distribution services. For one thing, fiber-optic solutions provide a guarantee for the future and, for another, fiber-optic cable can gradually replace copper cable as becomes necessary.

Interest in FTTL solutions exists not only in the Netherlands and Germany. Philips is discussing them with the post and telecommunications administrations of Australia, Spain, and Switzerland.

## CYPRUS

#### Television Interference 'Tracked' Partly to North

NC0306124392 Nicosia CYPRUS MAIL in English  
3 Jun 92 p 2

[Text] Interference on CyBC's [Cyprus Broadcasting Corporation] second television channel has been tracked down to a source in the occupied areas of Cyprus.

The interference over the last few days has affected two main areas; in Nicosia on channel 21 which is picked up from Athalassa and in Larnaca on channel 35. A spokesman from the technical services of the station said yesterday the interference in Nicosia is coming from the direction of Kantara in the occupied area where the old CyBC station was.

However, he added that by Monday the problem had disappeared. If it reappears they will contact the United Nations to mediate and to persuade the 'authorities' in the north to broadcast on another channel.

The problem in Larnaca has been traced to another source. The interference is coming from one of the nearby Arab countries, probably Lebanon, the spokesman said. They are trying to eliminate the problem by seeking help from the Lebanese embassy in Cyprus.

## DENMARK

#### Mobile Phone Subscriber Identity Security Code

92WT0156A Copenhagen BERLINGSKE TIDENDE  
in Danish 18 Apr 92 Sec I p 5

[Article by Lise Penter Madsen and Bent Bak Andersen: "Protecting Mobile Phones From Fraudulent Use"]

[Text] Codes will stop telephone fraud. Security will now be tightened for mobile telephones. A so-called SIS (Subscriber Identity Security) code will prevent people from picking up other mobile phone numbers and installing them in their own phone in order to make calls at the expense of other subscribers.

This has been a very big problem in Holland which, like Denmark, is linked to the NMT telephone network and the SIS code was developed as a result.

Dutch mobile phone owners have received sky-high telephone bills for calls to places like South America and this led Dutch telephone experts to demand that the system be made more secure.

"The size of the problem is not alarming in Denmark and the other Nordic countries, but on 1 October 1990 a requirement was introduced that all new terminals must have SIS in order to be approved," said Peter Meyer, technical director of TeleDanmark Mobil.

The stricter requirement applies only to the NMT 900 network. Mobile phones that were sold many years ago are not protected and they can be misused. According to telegraph inspector Haule Eskesen of the Telecommunications Administration around 30 percent of all mobile phones in Denmark are so old that they do not have the security system.

There is no security system in the United States and fraud there runs into the millions.

"Here in Denmark things are under control," Eskesen said. The system has not been used until now because it requires changes in the mobile phone network, but according to Meyer subscribers will start using the SIS codes within a very short time.

## FRANCE

### French Telecommunications Research Network Inaugurated

92WS0540A Chichester INTERNATIONAL  
TELECOMMUNICATIONS INTELLIGENCE  
in English 30 Mar 92 p 1

[Text] The inauguration was recently carried out of a research network in Ile de France at the Paris Jussieu University. The network is the result of a partnership agreement signed last July between France Telecom and the Ile de France Regional Council.

Operating at speeds up to 34 Mbit/s, the Ile de France research network offers efficient low-cost interconnections of local networks over great distances. The network is also integrated into the national telecommunications network for research (Renater) with the aim to federate all regional networks on the move within national territory.

So far, seven sites have been connected. Two of the seven, the Laboratoire d'Oceanograph le Dynamique et de Climatologie (LODYC) and the Laboratoire de Physique Theorique des Liquides (LPTL), on the Jussieu campus, have used the network for research during its pilot phase.

According to France Telecom, future plans include the connection of the network to telecommunications networks for research abroad, particularly in the EC countries and in the United States.

France Telecom has also installed a 34 Mbit/s connection between the Saclay CEA and the research network. This is a European first, said France Telecom, as Ethernet, Token Ring and FDDI networks have never been connected at such a high rate.

Funding for the project, totaling some Fr60 million, was supplied by the Ile de France Regional Council.

### Roulet Discusses France Telecom Future

92WT0145A Paris L'EXPANSION in French  
2-15 Apr 92 pp 66-71

[Interview with France Telecom president Marc Roulet by Herve Jannic; place and date not given: "Roulet Says France Telecom, Already Leader in Technology, Will Also Become Leader in Services"—first paragraph is L'EXPANSION introduction]

[Text] International competition is imposing new constraints on France's telecommunications champion. Its president talks about this....

[Jannic] There has been a lot of talk about France Telecom bailing out one or another moneyloser, Bull for example. Are you as well-off as they say?

[Roulet] The financial condition of a telecommunications operator depends on its rates, its productivity and its debt. Our productivity is very good and keeps improving all the time. Our rates on average are rather low, and they are under increasing pressure from competitors. As for our debt—118 billion French francs [Fr]—10 percent of our operational revenue is required to service it. Finally, we pay the state a presumptive assessment of Fr14.5 billion, or about Fr6 billion more than if we came under the ordinary tax law. As a result, in 1991 for example, our Fr16 billion in pretax profits was reduced to Fr1.6 billion in net profit! In other words, we are profitable, but we are not rich; we are even very heavily indebted.

[Jannic] Are you getting ready anyway to participate financially in the restructuring of France's informatics service companies?

[Roulet] France Telecom intends to remain focused on its areas of expertise. So there is no question of diversifying simply to increase turnover. However, we need service companies as partners, in order to better satisfy our big clients, whose needs continue to change; a simple catalog of services is no longer enough for them—we must offer solutions tailored to their particular communications systems. The service companies can also help us in our international growth. And we in return can help them become world leaders in their own domain. Lastly, we are the only major worldwide operator that has not developed its own network software. So we must pay attention to the strategic control of such software, which is of critical importance to us. In other words, we are not indifferent to the informatics services sector. The initiatives we may take should be interpreted in that context.

[Jannic] France Telecom is sometimes accused of being more sensitive to technology than to commercial applications. Is that true?

[Roulet] I think it is no longer true. We are very much aware of the fact that we sell services, not technology. In the domain of telecommunications, equipment is 20 percent of the market, while services are 80 percent. The latter's predominance can only continue to grow. We

realize that the mere fact France Telecom has the most fully digitized network in the world is not enough to keep our clients satisfied. The problem is that network performance far outstrips the capacity of clients, especially enterprises, to make use of that potential, and this is because of organizational, even cultural reasons. Take the case of Numeris, our integrated services digital network [ISDN]: To find and develop applications, we have signed more than 50 partnership agreements covering all sectors of activity—each agreement involving a leader in the field plus a services company or informatics hardware manufacturer.

In another crucial area, we must improve the ergonomics of our services: When it comes to terminals, for example, the new services must be transparent, intuitive, accessible to all. Nothing to memorize, no chart to consult. A screen and a few simple function keys should suffice to guide the user. This is also the objective of the recently announced working group on multimedia terminals, and Apple in particular.

In another domain, company networks, the accord we just signed with Deutsche Bundespost Telekom, our German counterpart, is another move to improve services. Through our new joint subsidiary, Eunetcom, the idea is to help international enterprises better manage their worldwide data transmission networks.

[Jannic] France lags behind in cellular telephones. For a mass-market product, the licensing procedures are rather restrictive. Doesn't this conservative policy damage your image?

[Roulet] I don't think we have an image as a conservative or backward operator. I don't want to bore your readers with a point-by-point enumeration of the many domains where we are the world or among the world's leaders: digital networks (Numeris), packet-switching networks (Transpac), credit-card pay phones, Bi-Bop pocket telephones, etc. We are not one of the leaders in cellular, admittedly, but in another two years, with the European digital radiotelephone service—GSM [Global System for Mobile Communications]—we will be in the forefront. With regard to licensing procedures, for the last three years that has been out of our jurisdiction and under the Ministry of Posts and Telecommunications. While it was under our control, we of course organized it that way to protect the network and the consumer. If it also served the interests of French industry, who should complain? You should note that the sole interest of the operator, obviously, is to have the greatest possible number of terminals—telecopiers, for example—connected to his network.

[Jannic] When you're sitting on a monopoly, are you really tempted to take risks internationally?

[Roulet] The areas of operation where we enjoy a monopoly are decreasing steadily and rapidly. So we have a choice: We can either hang on to our besieged strongholds and try to stem the decline, or we can go on

the offensive, accompany our clients beyond our borders, and recoup on the international market the business we are inevitably losing in the domestic market. We have chosen the second option. A choice that is not simple, because our major competitors have advantages of their own: NTT, the world's biggest operator; AT&T, the dominant operator in the world's largest market; Deutsche Telekom, the gateway to the East; BT, formerly British Telecom, with the City, the Commonwealth, the European headquarters of big multinationals. Our advantage, our uniqueness, is in being the leader in telecommunications technologies. Our successes in Mexico, Argentina, the United States and Poland were not just due to good luck, they were due to our leadership in technology. They were also the result of a strategy based on systematic assessment of markets: segmentation by country, analysis of opportunities and risk factors, competitive position, political contingencies. It's the very opposite of a catch-as-catch-can approach.

[Jannic] Are the others doing the same?

[Roulet] For the moment, only BT and Telefonica (Spain) in Europe are pursuing such an ambitious policy.

[Jannic] As luck would have it, these two operators have been privatized. Does that mean privatization is a panacea?

[Roulet] Certainly not, and our own profitability is the proof. Nothing irritates me more than the glib stereotype that private sector equals good management and public sector equals bad management. Competition does not necessarily imply privatization. Indeed, the choice between public and private is first of all political. But it is true that Europe and competition are raising new questions. As a shareholder, how can the state, which has a tendency to adopt sweeping policies based on macroeconomic considerations, assure every enterprise under its control the means to meet foreign competition on the best possible terms? How can we satisfy the principle of reciprocity, that is have a policy of international expansion, without offering a counterpart on the domestic market? That's the problem EDF [French Power Company] has run into in Germany.

[Jannic] Although France Telecom's legal status has been changed, isn't it still an enterprise managed by government officials?

[Roulet] Indeed, almost all of France Telecom's personnel are still government employees. Likewise, a large part of the managerial corps comes from the ranks of the civil service. I think this is the case for many of France's large enterprises, in the private as well as public sector. The novel thing, and one of the fundamental features of the reform, is we are in the process of changing from a system of remuneration by grade to remuneration by job function. This is a veritable revolution!

But let's take this a little further, because I really sense a pejorative connotation to your question. The issue is not whether our personnel are government employees but

whether we meet our clients' needs. The success of France Telecom is measured by three indicators: turnover, which registers the quantity of services sold to the community at large; profit margin, which shows whether our operations are being run on an economically sound basis; and indicators of satisfaction, which reflect client opinion. We and others periodically survey our clients. The annual public opinion survey last November showed that 93 percent of our clients thought France Telecom was being operated well or moderately well. This figure compares with 91 percent in 1990 and 89 percent in 1989. When the enterprises were surveyed at about the same time, 98 percent expressed a favorable opinion of us, versus 95 percent in 1989. We are also conducting more surveys to assess the quality of communication, maintenance and customer service in our branch offices. We are even going so far as to establish a quarterly rank-ordering of all our branches based on what the surveys show. Believe me, we have only one objective: to satisfy our clients, to win their loyalty. That's the best way to protect the quality of a public sector enterprise and maintain its legitimacy.

[Jannic] Do you think of yourself as a CEO or as a high-ranking civil servant?

[Roulet] I would tend to say both. My first loyalty is to the state, which I have served for more than 35 years in various positions. I have been chosen to serve in highly responsible positions by several governments. I think I have a certain feeling for the role of the state. I recognize the legitimacy of political guidance over administrators in the public sector. But that does not stop me from proposing, discussing, acting. Four years ago, I feared France would be the last major country in Europe to reform its telecommunications sector. Now I have had the opportunity to take charge of preparing and implementing the telecommunications part of the far-reaching reform of PTT [Posts, Telegraph, and Telecommunications] that was announced by the government and approved by Parliament in 1990. For me it has been very satisfying, because this reform goes in the direction of what I am trying to accomplish and what we hope to achieve at France Telecom: to put the efficiency of a well-managed enterprise at the service of the public and the general interest.

## GERMANY

### Diamant Optical Digital Signal Transmission System

92WS0492A Heidelberg NET—NACHRICHTEN ELEKTRONIK + TELEMATIK in German  
Apr 92 pp 156-158

[Article by Helmut Feilhauer, Klaus Krull, and Hans-Gerd Zielinski: "Digital-Optical Transmission System for Television and Sound Radio; Fiber Optics Compatible With Copper"—first paragraph is NET introduction]

[Text] There has been great progress in the distribution of television signals over the past decade. The course of development has gone from small individual networks to one extensive network. The transmission media employed for this are satellites like the DFS [German Association for Solar Energy] Kopernikus, directional radio systems as carriers for distribution networks and local-hookup-area coaxial systems, and with shorter carrier distances.

Since 1990, optical systems with analog transmission technology have been employed in both communication-line networks (carrier distances) and local-connection networks. Particularly with respect to carrier distances, fiber optics is today already more economical than copper coaxial cable technology.

The disadvantages of analog optical distribution systems, such as limited range, the need for laser safety devices because of the high transmission level, very high demands on lasers and optical amplifiers with regard to linearity, performance, and noise, as well as the low splitting factors in the television distribution network, can be eliminated through the employment of digital transmission techniques. This is on condition that there is an economical adaptation to the important features of the existing television distribution network, that is, a gradual introduction of the digital-optical systems, starting from a broadband communications network to the subscriber (fiber to home), integration of the new synchronous digital transmission technology (SDH [synchronous digital hierarchy]), compatibility with present-day subscriber and operational interfaces, suitability for current and future television standards, as well as expandable capacity (number of channels, signal quality, etc.).

The "Diamant" concept of a digital-optical transmission system developed from the ANT [German space electronics firm] communications technology meets all these requirements. Thus, through the above-mentioned measures, an economical solution with a guaranteed future is provided.

The general characteristic of a distribution network is the large number of receivers that are connected with one transmitter. Hence, the cost of the receivers essentially determines the cost of the whole system. For this reason, the receivers have to be as economical as possible.

### Description of System

The basic idea of the proposal for this system is analog-digital conversion of the whole 450-MHz transmission band with an analog-digital converter and reconversion in the receiver with a digital-analog converter (Figure 1). The analog-digital conversion necessary to achieve this, as well as the transmission bit rate of over 10 Gbit/s, is not yet available with the present state-of-the-art. This is why the solution represented in Figure 2 is applied with Diamant. After digitalization of the individual channels and subsequent frequency conversion, these channels are

## WEST EUROPE

combined into a partial bandwidth at the transmitter consisting of, for example, 16 television channels. At the receiver this partial bandwidth is reconverted by a digital-analog converter and then restored to the original signal condition (VHF/UHF range) by a subsequent frequency band conversion so that the television sets in use today can continue to be used without additional equipment. Fiber optic transmission is effected with a bit rate of about 2.5 Gbit/s. The number of programs can be increased by connecting several 2.5-Gbit/s systems in parallel and combining the channel groups after digital-analog conversion or by increasing the transmission bit rate (to, for example, 10 Gbit/s, corresponding to 64 television channels). With the same technique, FM, DSR [digital sound radio], NTSC [National Television Standard Code], SECAM [sequential color and memory], and D2-MAC [definition 2 multiplexed analog component] signals are transmitted and distributed.

### Network Features

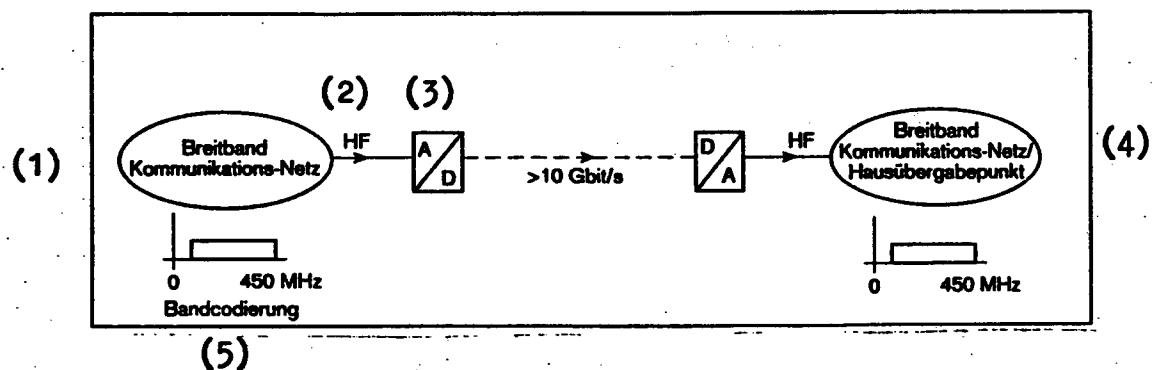
The introduction of new technologies like synchronous ring networks, synchronous digital hierarchy, fiber optic transmission technology, network management, etc. are leading to more flexible, more powerful networks that are easier to maintain. These technologies are today already being employed with great success in Telekom, the German Federal Post Office telecommunications network. But their deployment is not only of interest to this sector, but also in connection with the broadband distribution network since their advantages also have a bearing on the latter:

- Rapid connection of calls for existing network access points, for example, between the broadband communication distributor point and one or several superordinate broadband communication amplifier points,
- Making resources available that are not permanently needed,
- Greater availability through automatic replacement switching,
- Constant automatic monitoring of the quality parameters of the lines and systems,

- Connections between regional broadband communication networks, for example, for exchanges of programs,
- Expansion of planning areas and thereby reduction of the number of reception points needed,
- Easy insertion of additional network nodes (for example, superordinate broadband communication amplifier points) in the ring.

The use of synchronous broadband communication networks based on fiber optic systems is particularly advantageous in broadband communication line networks (Figure 3). The superordinate broadband communication amplifier points are connected to the broadband communication distributor point and the broadband communication amplifier points on the user end of the line to the superordinate broadband communication amplifier points by means of a ring network. A local or global management system assumes functions like configuring, monitoring, replacement switching, etc. In it individual signals are already digitalized at the point they are fed into the communication line network (for example, at the radio receiver) and transmitted to the superordinate amplifier point via the synchronous digital hierarchy transmission system. The fiber optic transmission technology required to do this has today either already been introduced into the German Federal Post Office Telekom telecommunications network or will very shortly be introduced into it (for example, SLA-16, synchronous technology for local networks).

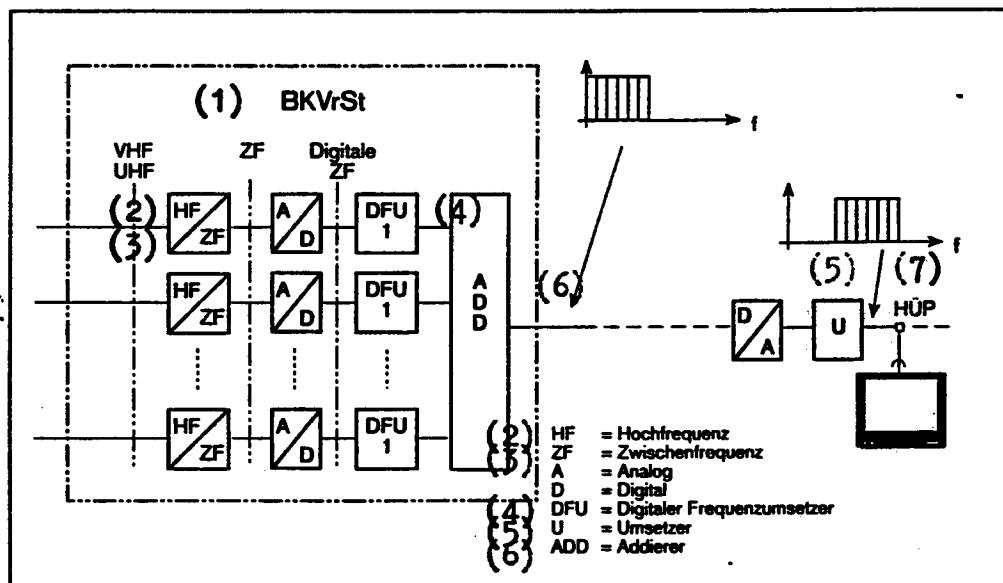
The system that has been presented here demonstrates a way of economically making use of digital and fiber optic transmission technologies for television distribution networks. With the introduction of these technologies, we can more advantageously proceed with the introduction of new network structures by means of which operational as well as economic advantages will be realized. The Diamant system for the first time makes possible digital transmission of top-quality television and radio signals over optical fibers from the studio to the subscriber, a transmission technology that is compatible with the existing coaxial-cable distribution technology.



The basic idea of the proposal for the system is the analog-digital conversion of the entire 450-MHz transmission bandwidth.

Key:

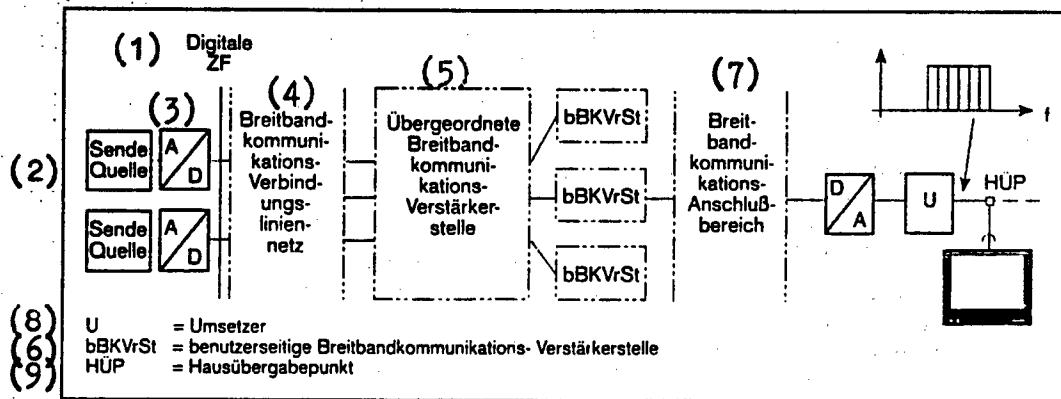
1. Broadband communication network
2. High frequency
3. A = analog; D = digital
4. Point at which broadband communication network delivers signals to house
5. Band coding



The Diamant Solution.

Key:

1. Broadband communication amplifier point
2. High frequency
3. Intermediate frequency
4. Digital frequency converter
5. Converter
6. Adder
7. Point at which broadband communication network delivers signals to house



Synchronous fiber-optic ring networks.

## Key:

1. Digital intermediate frequency
2. Transmitting source
3. A = analog; D = digital
4. Broadband communication line network
5. Superordinate broadband communication amplifier point
6. Broadband communication amplifier point at user end of line
7. Broadband communication connection area
8. Converter
9. Point at which broadband communication network delivers signals to house

## ITALY

## 1991-94 Telecommunications Programs Presented

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[Article by Roberto Parodi, head of Italian State-Owned Telephone Company, SIP, Marketing Strategies Division, and Giovanni Battista Di Stefano, head of SIP's Network Services: "Italy's Forthcoming Telecommunications Scenario"]

[Excerpt] [passage omitted]

## The Development of Telecommunications Networks in Italy

A major operation to improve and upgrade the national telecommunications network has been underway for some years now. The key elements in this process are the digitization of basic network infrastructures (exchanges and trunk networks) and common channel signaling between exchanges.

A significant effort has been put into this development and renewal, which has been primarily directed toward improving the quality of telephone services and increasing the range of services offered. Digitization and the introduction of a common signaling channel are indispensable prerequisites in a development process aimed at providing advanced services and networks. By

using standard infrastructures the subscriber's ever-increasing demand for personalized services can be satisfied in a more economic and flexible manner.

In line with the process of digitization of exchanges to be completed by the year 2000, SIP's [Italian State-Owned Telephone Company] development plans forecast that approximately 68 percent of exchange numbers will utilize the new technology by 1995. Digitization of the interdistrict trunk network should be completed by 1994. The most important network development projects center around digitization, particularly ISDN [integrated services digital network] the intelligent network, mobile services, and, in the medium to long-term, broadband services.

## ISDN Development Strategy in Italy

The concept of the ISDN service and the role it should play in the range of telecommunications services offered by a company varies considerably between operators in the sector, especially between those in the United States and in Europe.

The main causes of this difference are the various kinds of regulations and markets existing in the different countries. For some years now, companies in the United States in particular have found themselves operating in a highly dynamic and deregulated market where competition has obliged them to offer new services (such as Centrex, private virtual networks, etc.) that do not always conform to common standards. For this reason, they see ISDN more as a support tool for the services

already available, rather than as a means of renovating and integrating the networks of the various companies operating in the United States.

In Europe, on the other hand, in accordance with EEC directives, there is a strong awareness of the need for a single basic network and the necessity to integrate the networks of the member states. This is seen as an essential prerequisite for real and effective competition in the European telecommunications market.

It was on the basis of this necessity that in 1985, Italy, France, Germany, and the UK signed an agreement called "Four-Party Group on ISDN," to define common standards that would enable their respective national networks to be interconnected by 1993. Considerable expectations were raised by this initiative to the extent that in 1989, as a result of the group's action, companies in 20 countries—including SIP, Italcable, and ASST [State Telephone Services Agency] in Italy—signed a "Memorandum of Understanding for the development of a European network by 1993."

The importance of ISDN in Europe is based fundamentally on two factors. First, it establishes a common standard for access to the telephone network that is in keeping with universally recognized international specifications. This facilitates network interconnections and access to service centers that offer added-value applications services. Second, with the digitization of subscriber lines, it allows for digital subscriber-to-subscriber connections. This makes for improved connections as well as the development of long-distance services and the integration of transport services with a common access.

For Europe it is exactly because of these characteristics that ISDN represents a natural evolution in telephone networks.

By digitizing subscribers' twin lines, ISDN can offer a variety of integrated services (audio, data, and images) efficiently and economically, through standardized access to the network by the subscriber who, depending on his requirements, may request:

- One or more basic accesses, each made up of two 64-Kbps channels (B channels), for the transmission of vocal messages, data, or images, and one 16Kbps channel (D channel) for signaling or the transmission of data packages;
- One or more primary accesses, each consisting of 30 B channels and one channel at 64 Kbps.

A survey of market prospects in Italy has been confirmed by similar surveys carried out in Europe, and shows medium to large commercial subscribers as the preferential target during the network's initial consolidation and start-up phases. As the service becomes recognized and the cost of subscriber equipment decreases as expected, a second phase will follow during the course of which, small commercial subscribers, including the tertiary and professional sectors, will be the protagonists.

Lastly, in the medium to long term, ISDN will also be of interest to the more affluent private subscribers.

A tariff schedule has been proposed on the basis of market forecasts and an analysis of implementation costs. This schedule has been presented to the relevant national bodies for approval who tend to favor access to ISDN over the multiple number of accesses currently required for the same number of services/applications. The proposed tariff structure, which is based exclusively on installation costs and a bimonthly fee with fixed rates for voice or data traffic, is in line with that of other European countries such as France, Germany, etc.

Since this is a completely new service, the completion of the ISDN infrastructure is expected to take place in two distinct phases. First, a "pilot" phase, followed by the so-called commercial stage, when the ISDN service will become available on a wide scale.

#### The Pilot Phase

This phase (1991-92) which began during the second half of the last year, is designed to field-test the feasibility of ISDN and the suitability of the marketing strategy, as well as organizational and management aspects. During this phase, the structure of the network will overlap and will include the following 11 cities: Genoa, Turin, Milan, Venice, Trento, Bologna, Pisa, Rome, Naples, Bari, and Palermo. The pilot network is equipped with 140 primary accesses and 7,000 basic accesses. A dedicated automatic telephone switching system will be installed in each of the cities and will connect ISDN subscribers in other areas through remote multiplexing and concentration units. Each automatic telephone switching system is interconnected with other ISDN exchanges in the pilot network, with the existing telecommunications infrastructures (telephonic network, sound and data network, and ITAPAC [Italian packet switching network], and also with the ASST and Italcable ISDN exchanges. Some international ISDN link-ups—both European and intercontinental—are envisaged in the pilot phase.

During the pilot phase, other services will be offered together with the typical ISDN transport services (analog connections, digital connections, and packet assembly) and the new services currently foreseen for the digital exchanges (documentation of charges, remote meter reading, call holding signal, transfer to another number, automatic invalidation of outgoing traffic, direct dialing). These include caller identification, real-time information on charges, and multinumbers that allow an incoming call to be directed to any one of eight terminals connected to an ISDN line.

#### The Commercial Phase

This phase (from 1993), on the other hand, will begin in the first half of 1993. As provided for in the Memorandum of Understanding, the services offered will fully conform to international standards. During this phase, the ISDN service will be gradually extended to all

subscribers in the national network and will be interconnected with similar services in the countries that are signatories to the agreement.

SIP will make a major effort in terms of both investments and planning for a rapid takeoff of the ISDN service, and to guarantee optimum coverage over the national territory. By 1995 it will be possible to offer the service to 70-80 percent of potential subscribers. During this phase, new services will also be activated, such as the Closed Group of subscribers, three-party conversation, subscriber-to-subscriber signaling, the date/time of fax transmissions, and several variations on the call transfer (e.g., transfer from an occupied number, or selective transfer based on caller identity).

Market surveys have shown that subscribers view ISDN as having various advantages depending on the applications. The advantages seen in acoustic applications concern quality, with an almost total absence of sound deadening, distortion, and noise.

The advantages for long-distance services (such as facsimiles, slow scan video, and videoconferences, etc.), are that the number of services will increase, while the specific nature of the service will remain unaltered.

For applications based on subscriber-to-subscriber connections, ISDN services are viewed positively since they improve the efficiency of networks and company information systems substantially, and above all, make the development of new applications economically viable.

Problems of integration within the various computer systems do not arise, since ISDN is a circuit switching network and has connection times of less than one second. All the major computer manufacturers have developed the hardware and software products necessary to interface the components of their system—from mainframes, to personal computers, and LAN (local area networks) etc.—with the ISDN network connections which come into operation when a communication is initiated.

Forecasts are that business networks, most of which currently use dedicated circuits, will gradually be transformed and switching services for backups and traffic overflow will be used either as an addition to, or a replacement of, direct circuits. The advantages are improved elasticity, configuration, reliability, and efficiency, and overall cost effectiveness.

It is anticipated that in the short term, ISDN will tend to assert itself in the business world as a computer network. In the medium term, instead, traffic will be generated by new applications in which high-speed data and image transmission will become not only the determining element for the success of the application itself, but also a business innovation for the companies adopting it. Finally, in the long term, with the establishment of videophone services and the possibility of working from home the use of ISDN will extend to the domestic market.

Another, but definitely not secondary, advantage of ISDN that is of interest to both users and operators, is its coordinated introduction into the main European countries. This will lead to a large common market for both telecommunications services and products.

#### The Development of the Intelligent Network

Diversified needs and the continuous growth of the telecommunications market, require a more timely response from management in the development and diffusion of new services. For this reason "new intelligent functions" are being increasingly incorporated into telephonic networks.

Market demand is no longer limited to the request for improved basic services. It is directed toward new applications that can promote the development of new services, and permit increased flexibility in various network functions, such as traffic routing, connection charges, the control and management of subscriber and network data, etc.

Existing telecommunications networks are characterized by a certain degree of rigidity in relation to these functions. This desired flexibility can be obtained only through new services that should be concentrated in strategic points of the country both for management and for technical and economic reasons.

The search for a solution to these problems led to the definition of the intelligent network concept. The setting up of the first systems with very few services, toll-free numbers being the first, has been followed by the current definition phase of the intelligent network concept. An internationally standardized infrastructure is envisaged, with interfacing networks and service supply procedures. A point of convergence between the countries involved is being sought and an urgent standardization process is being carried out through various international bodies (CCITT [International Telegraph and Telephone Consultative Committee], ETSI [European Telecommunications Standards Institute], etc.).

The basic characteristic of such a structure is that services are no longer furnished by any single exchange, but through cooperation between the exchange and other centralized computerized systems (nodes), thus requiring the formation of a network.

The intelligent network concept, therefore, represents a completely new approach to the problem of adapting the range of services to the needs of the user. The basic advantages of this system are its improved speed and operational flexibility. Since the more complex processing is carried out within the centralized nodes (which are few and homogeneous) not only can this be done more easily (the exchange software must not be involved), but major efforts are not required each time a new release for the modification or development of new services is made.

This type of architecture also has a certain importance in the evolutionary framework of telecommunications networks. Although initially limited to the telephone service, this approach can be gradually extended to, and integrated with, other services (ISDN, personalized telephone services, etc.), and thereby greatly promoting the development of traffic and new services in the public telephone network.

The universally accepted intelligent network architecture is as shown in Figure 2 [not shown].

As far as the development of intelligent network services is concerned, they are currently a significant reality only in the United States, where they were born some 25 years ago. Despite their considerable success, the annual growth rate is still strong; around 10 percent in terms of users and 20 percent in terms of traffic.

A series of important factors in the United States have been the reason for the significant growth of these services, namely:

- The market is strongly deregulated;
- The market operates within a vast economic and territorial context that favors the development of telecommunications services;
- Telemarketing services have been part of the American culture for some time now, and are widely used by operators in the promotional and advertising fields, and for the sale of various goods and services.

In Europe, however, intelligent network services are still in the initial stages of their potential development. Intelligent network services (particularly toll free numbers), are currently provided in several European countries (France, Germany, the Netherlands, and Italy) using ad hoc techniques. In the UK these services are currently available through an intelligent network architecture based on AT&T technology.

Intelligent network services in Italy, primarily toll-free dialing and virtual private networks, have been commercially available since 1987.

The technology that made this early extension of intelligent network services throughout the country possible was the voice data network. From an architectural point of view, this network is sufficiently close to the concepts that characterize intelligent networks to permit sufficiently advanced applications for the two services mentioned above. The architecture of the voice data network, and that of the intelligent network, is based on separate nodes containing the user's data and the processing resources relating to the services supplied. The voice data network, however, also exploits the common signaling channel to facilitate the exchange of information between the various network nodes.

According to market research at the national level there will be a considerable growth in such services over the next few years. SIP's development plans provide for a

nationwide intelligent network to meet the market demand for additional services.

This plan is divided into two phases. During the first phase (1992-94), after the necessary infrastructures have been prepared, the intelligent network will be activated as part of the public service, offering those services currently available through the voice data network. From 1993 on, other services will be made available: special tariffs, universal numbering, bulk calls, and tele-voting.

During the second phase (1995), with the strengthening of the network by means of additional blocks, other important services will be activated or transferred to the intelligent network: personal numbers, and calling cards (a service introduced in 1990 through a specialized network).

The intelligent network, having developed new and more intelligent network functions, will in the future also act as a support for other services:

- Vocal message services: both the recording of messages (centralized answering machines) and their eventual forwarding to the addressee. The development of audiotex services to provide subscribers with a variety of information;
- Automatic collect calls;
- Class services;
- Centrex, personal telephony, etc.

### Mobile Services

Generally speaking, mobile services in the field of telecommunications are a group of services that use various technologies based primarily on radio access, and that allow the user to send and receive messages while on the move. For this reason mobile services have always been viewed positively by subscribers, particularly among businesses and more affluent private users.

Many of these services are already well-known to the majority of users. Consider for example the success enjoyed by services such as paging, cordless telephones, cellular radiomobile services, portable telephones, etc. Other services in which mobility is not tied exclusively to radio access, Universal Personal Telecommunications (UPT) for example, are still in a development or early production stage and are less well-known to the general public.

According to forecasts, there will be a strong emphasis on the development of mobile services in the coming years. In the medium to long term, approximately 70 percent of the active population will use at least one mobile service—a market penetration that will almost equal that of the fixed network. Figure 3 [not shown] shows a relative growth rate that puts the number of fixed subscribers on a level with radiotelephone users at the worldwide scale.

Figure 3 also shows a strong increase in the personal telephone market from the mid-1990's. There are currently 7 million users of radiomobile services in the world—a minimal percentage compared with the almost 500 million subscribers to fixed networks. However, on the basis of growth rate predicted for mobile services, these figures could converge during the early part of the next century.

Figure 4 [not shown] shows the situation in relation to services, applications, and the market. With the introduction of digital cellular systems, which use a spectrum of frequencies higher than those obtainable with analog systems, radiomobile services represent a turning point in the development of mobile telephony. Though initially limited to automobile travel, business subscribers in particular were immediately attracted by this service and saw positive advantages in this new means of communication.

Taking into account the possible reduction in the cost of terminal time and network equipment, many research studies indicate that the market penetration of the service will be equal to around 10 percent of Europe's active population by the year 2000. Even though there has been considerable development in this sector in the past few years, Europe still finds itself in a phase of what may be considered underdevelopment in relation to its potential, especially when compared with the United States and Japan.

The main causes of this delay have been the lack of a European standard, and small national markets where economies of scale in support of a greater market growth are not viable. This situation should change radically with the coming of two important events: the availability of the pan-European digital system, GSM [Global System for Mobile Communications] in 1992 and the creation of the single European market in 1993.

Together with cellular telephones, there will be a future increase in applications for cordless telephones. In this regard, the Telepoint service should be mentioned. Telepoint was initially conceived in the UK to allow cordless telephone users to make outgoing calls through radio base stations spread across the country.

These stations offer users a service that is similar to public call boxes. They are interconnected to the public telephone network with a centralized data base for the real-time verification of the subscriber's personal data. The service is not, however, enjoying the success envisaged by its promoters—probably because of its undirectional nature (only outgoing calls can be made).

In general, the success and a mass growth of mobile radiotelephone services are dependent not only on market forces (demand, terminal costs, tariffs, quality, etc.), but also on the number of radio channels available and the frequency bands assigned to this type of service. Radio frequencies are, however, a highly regulated and limited resource that caters for the needs of various

sectors of our society: civil and military radio communications, radio navigation etc.

If mobile radiotelephone services are to have mass growth, it is essential to increase the number of users per square kilometer handled by a given system. New solutions are being studied at the international level, and a commercial prototype of the PCN [Personal Communications Network] system will probably become available in 1993. To handle high density telephone areas, these systems are based on two important requirements: minute cells (picocells) which are indispensable in handling high density areas, and the availability of a wider band of radio frequencies.

It is envisaged that such systems, being able to handle areas with a higher user density per square kilometer and requiring a lower investment per single user than radiomobile services, will reach a penetration level of around 30 percent of the active population by the year 2000, as shown in Figure 4 in a European market of over 50 million users.

The parallel development of telephonic networks and new services will guarantee more complex mobile services for subscribers. Here lies the concept of personal telephonics, that will mean the end of the rigid user-fixed location, or user-terminal combinations. Each subscriber will be given an identification number that he will use to identify himself to the network when making or receiving calls.

At the international level, progress is also being made in this direction with the definition of UPT. Rather than a service, UPT is a completely new concept in network management. It permits the average user to communicate with his usual correspondents, and to make or receive telephone calls (or data) by using the intelligent functions present in the network itself, even while in movement.

Such traffic can be generated by various networks (fixed, radiomobile, etc.), each with its relative charges and where transmission properties are limited only by the services of the terminal utilized.

The qualifying factors of this new way of managing UPT connections are the "profile" of the user, and the "personal number." The user's profile is a record, held in a centralized data base, describing the applications and services to which the user has subscribed (type of terminal, alternative routing, protective identification number, personalized answering services, etc.). The service is therefore managed on the basis of this profile.

The personal number, on the other hand, is a code that identifies the user alone, and is used to locate his position in the territory. The UPT does not require the user to limit himself to a fixed location (as in the case of basic telephony), or a terminal (as in the case of radiomobiles).

To guarantee a certain operational flexibility, additional services will be offered together with the basic UPT service. This will permit the user to intervene directly in some aspects of his personal profile (type of terminal, alternative routing, etc.), as and when required.

The UPT is presently undergoing a finalization phase at the principal international standardization bodies, (CCITT, ETSI). The first UPT applications (the so-called "restricted" UPT), based on few functions, are envisaged after 1995.

Finally, a mass market (estimated in terms of terminals equal to 60 percent of the active population) should be attainable by the end of the decade, with new and more advanced (see Figure 5 [not shown]) personal telephone systems (UMTS [Universal Mobile Telecommunications Systems]).

These systems, which are currently being defined within the framework of European research program, will be equipped with technological innovations that will combine all radio transmission technologies.

UMTS will be capable not only of handling information in vocal form, but also in data form. This last possibility is essential for high-speed transmissions (up to 2 Mbit/sec for applications such as videotelephony and still pictures).

#### Broadband Services

A great deal of attention is currently being given by all telecommunications operators to the problems of broadband networks and services. On an international level, the question of which services should be implemented, and with which technologies, has been under discussion for some years. It can be said that the long-term objective will be broadband ISDN (B-ISDN). Such a network must be capable of guaranteeing all the services classified by the CCITT. How to arrive at that point, both from a technological and a structural point of view, is still an open question.

In the present-day market, B-ISDN services as defined by the CCITT in particular, are more an evaluation of what is possible from a technological point of view, than an analysis of actual market requirements. Some evaluations of the areas of potential users have brought about a reconsideration regarding both the services to be offered on high-speed networks and their impact on network strategies. Based on these evaluations, several commercial applications have been proposed lately to satisfy the communications needs of certain users by offering tailor-made services.

It is clear that, during the introductory phase of high-speed networks at least, a significant subset of services defined by the CCITT should be considered. This subset should be tailored to meet the needs of those groups of users most qualified to readily accept the new services on offer.

These considerations are particularly critical at the present moment with the first, and as yet unclear, emerging indications of market requirements and technological solutions.

For the reasons set out above, SIP is very much involved both in contributing to the definition of international standards for B-ISDN, and also in evaluating and satisfying the emerging need for broadband services in the national market.

In Italy, the large-scale diffusion of commercial television stations capable of offering a free and overabundant service to satisfy television communication needs, the regulation of this sector, and the still-open debate, make it difficult to interpret the market for broadband services on fixed networks. On the other hand, the services mentioned are directed almost exclusively at domestic users who would, at least initially, be excluded from the offer of broadband services.

The offer of broadband services to the more sophisticated business sector is, however, another matter. With its growing communications needs and the range of applications to be satisfied, this sector is more prepared to invest in new telecommunications equipment.

The characteristics of the business subscriber, as a potential user of broadband services, are the need to transfer considerable volumes of data, to link LAN [local area network] environments or other heterogeneous environments given the necessity for high-speed transmissions (for mainframes, graphic workstations, etc.), and finally, and the need to satisfy specific applications requiring the high-speed transmission of images (e.g., CAD [computer-aided design]), or videos (videoconferences).

In Italy, an important program called START (System for Business Traffic on Telecommunications Networks) is underway to satisfy these and other needs of the business users. The system will ensure these users a telecommunications system based on a technologically advanced network infrastructure, capable of providing both low- and high-speed telephone and data services, that can guarantee reliability, flexibility, and quality.

The basic characteristics of these systems are:

- An advanced user access system called Flexible Access System (FAS) that allows the user's existing services to be combined on a single high-quality carrier, an optical fiber, and interconnects the user with the relevant SIP exchange. To ensure improved applications and service quality, overabundance of this connection is also envisaged;
- Exchange equipment to direct the user's signals to the respective networks, and depending on the type of connection required by the user, with the telephone network, ITAPAC network, ISDN, DNC [Direct Numerical Circuit], DED [Digital Electronic Distributors], etc.

Among the many broadband services that can be accessed through START are satellite and DNC direct connections currently operating at up to 2 Mbit/sec, as well as the nodes of the broadband CLAN [commutated local area network].

The CLAN network was developed by SIP within the framework of the EEC's STAR [Special Telecommunications Action for Regional Development] program for southern Italy. CLAN nodes are currently situated in Naples, Bari, Cagliari, Catania, and Milan. SIP plans to extend this network to other localities to meet users' requirements as of 1992. The services offered include high-speed connections between LAN (Ethernet and Token Ring), and Host. From the beginning of 1992, the network will also offer frame relay services which represent an innovative solution in LAN interconnection services.

Subsequently, the CLAN network—evolving toward SMDS on the IEEE 802.6 standard currently being defined—will be integrated with other applications already being implemented and that employ MAN (metropolitan area network) technology.

The concept of metropolitan networks arose initially from the need to extend the potential of LAN to a wider area than that covered by a local network. This need, which was and still is, the main objective of MAN, can now be fulfilled and in the future a wider range of services offering an integrated response to communications requirements will be available to the business community.

MAN applications already in function or envisaged shortly, concern the city of Turin (already in function) and in collaboration with CNR [National Research Council] the cities of Trieste and Florence/Pisa.

### Conclusions

In industrialized countries, telecommunications are becoming an increasingly strategic resource, that is indispensable not only for social development, but also to increase the competitive capacity of individual countries. Consequently, the evolution of the technical infrastructure of telecommunications networks toward more efficiency and a greater response to user requirements in terms of flexibility and personalization of services can no longer be postponed.

From what has already been said, it can be seen that things in Italy are moving quickly to ensure that the growth of national telecommunications networks, in terms of market penetration and the development of services, is in line with that of other European countries. This development process, particularly of the networks, is backed by an investment plan that is one of the largest in Europe—approximately 43 trillion lire over 1991-94.

The principal elements of this investment will be the penetration of the basic telephone service which, during the next few years, should come into line with that of the

more advanced European countries; the complete digitalization of the basic telephone network; and the development of services—the most important among which are ISDN, the intelligent network, mobile services, and, of course, broadband services for the business community.

The intent of this article is to give a picture of the envisaged development plan. However, the telecommunications services currently offered by SIP already include network services capable of handling the most advanced applications (the ITAPAC network, for example, for the transmission of data packages, and the LAN networks). These applications will undergo a considerable development process that will permit the services offered to keep pace with market requirements. Naturally, this process will take place in stages, in line with the other new developments described in this article, and within the context of a coordinated and well-balanced growth in the entire field of services offered by the Public Administration.

### NETHERLANDS

#### Philips Presents ISDN Innovations

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TELECOMMUNICATIONS INTELLIGENCE  
in English 6 Apr 92 p 5*

[Text] Hilversum-based Philips Business Communications has unveiled a new range of private ISDN telephones, known as the SOPHO-SET P-range.

The telephones are equipped with a software package providing the same functionality and user interface as the existing S-range. Communication is by means of the proprietary Layer 3 Terminal Message Protocol.

The P-range terminals can be connected to the four-wire Digital Line Card of the SOPHO-S ISPBX or to the Private Network Termination (PNT1). The advantage here is that the new P-range allows the customer to choose one uniform type of line interface at all extensions. At distances of up to 1 km point-to-point, the P-sets can be connected directly to the PBX, with two voice-only sets or one voice/data set connected to one four-wire S<sub>o</sub> interface. The PNT1 extends the connection distance by up to 2 km and can also be used where existing two-wire cabling does not allow for the connection of four-wire ISDN terminals.

Because of the multi-protocol capability of the S<sub>o</sub>, the user can connect special ISDN equipment such as Group 4 facsimile and ISDN PC-cards which need extra protocol elements not yet provided by the standard ISDN. The P-range permits the customer to decide whether a two-wire or four-wire infrastructure will be used, depending on the distances involved and the equipment to be connected.

Philips' P-range of terminals comprises the SOPHO-SET P375(D), the SOPHO-SET P370(D) and the terminal

adapter SOPHO-LAM P375 which is a data-only terminal providing V.24 data communications connection to other devices, such as a PC or VDU.

#### Extends Range of Telephone Headsets...

Meanwhile, Philips is extending its range of telephone headsets for the SOPHO-S range of digital PBXs with a new model from Plantronics International. Plantronics has developed two headsets for Philips' SOPHO-S range. The latest, the Supra, has just become available worldwide. The Supra can be directly plugged into the Philips SOPHO-SUPERVISOR 30 and 50 operator consoles and their range of P and S series digital telephone sets.

Plantronics currently supplies the Spectra headset for two telephones available with Philips SOPHO-K key telephone systems.

#### Launches ISDN PC-Card...

In a third announcement, made at CeBIT, Philips Business Communications launched a new ISDN PC-card. Known as the PConnect, the card slots into a PC to provide an intelligent S<sub>0</sub> interface to an ISDN PBX, such as Philips SOPHO-S, or to the public ISDN.

PConnect comprises the PC-card and a range of software packages, each of which offers an application for enhancing the PC and exploiting the properties of the ISDN infrastructure, whether it be a private network based on networked SOPHO-S nodes or the public ISDN infrastructure, where it is available.

The first release of PConnect offers a number of software applications, including LAN routers, which allow the PC to become part of a LAN by using the ISDN as an extension of the LAN. Four different LAN routers are offered: NetBIOS, Novell Netware, TCP/IP and IEEE 802.2 (SNA).

Among the other applications is one which converts the PC into a screen-based telephone terminal, with personal electronic telephone directory, screen dialing, calling name and/or number display, list of unanswered calls, etc. Another provides telematics services, enabling the PC to be used as a Group 3 and/or Group 4 facsimile, as a Teletex terminal, for PC-to-PC file transfer and for Computer-Integrated Telephone functions; while a further application provides COM Port Emulation, allowing any commercially available MS-DOS-based data communications software package to be used for data communications between the PC and remote terminals. There is also an application package which allows use of a two-wire device, such as an answering machine, Group 3 facsimile or a standard analogue telephone set, in conjunction with the PC, while taking advantage of the 2B + D facility of the ISDN. An applications programming interface library is provided for developing customised applications.

Software applications will be developed continuously and will be added to the PConnect range as they become available, said Philips.

#### SWEDEN

#### 3 Firms in Competition for Global System Market

*92WT0153B Stockholm SVENSKA DAGBLADET  
in Swedish 6 Apr 92 p 39*

[Article by Henrik Ennart: "Final Sprint in Battle for Mobile Network; Global System of Mobile Communication Creates a Mass Market in Europe"]

[Text] The race for the new digital mobile telephone network, GSM [Global System of Mobile Communication], is in its final lap.

Televerket Radio has the best track record, with Comvik GSM close on its heels. But a longshot in the winners' circle, outsider Nordic Tel, keeping stride, is now investing a half billion kroner over a two year period in its network expansion.

The problem of getting the telephone models approved is moving toward a solution this summer and then, the real scrambling begins.

#### Test Procedure Is Halted

Originally GSM was to have been introduced on 1 July of last year, but the starting date has continually been set back because the countries involved have not been able to come up with a common test procedure in time.

"We plan on being operational by the end of the summer. After that, an explosion can be expected during 1993 and 1994," said Nordic Tel Managing Director Flemming Orneholt. Whatever happens, one thing is clear: GSM has an enormous future potential.

#### All Over West Europe

With GSM, one and the same mobile telephone can be used all over West Europe. Sound quality will be significantly better than in the present NMT [analog] network, and GSM telephones cannot be listened in on.

In Sweden, three operators have permission to build parallel GSM networks. They are Televerket Radio, Comvik GSM, and outsider Nordic Tel. Volvo, Trelleborg, and Nobel, among others, have large ownership interests in Nordic Tel.

The division will dictate that one will only be able to use his telephone in his "own" network.

All of the operators have chosen different retailers. Ericsson will retail through Televerket, Nordic Tel through Nokia, while Comvik will collaborate with Motorola, Siemens and Digital. "The competition will lead to low prices," said Flemming Orneholt.

**Mass Market Created**

He believes that the mobile telephone is now on the threshold of a true breakthrough. Because GSM covers all of West Europe, a mass market is being created for the first time which will make it possible for manufacturers to produce their handsets in extended series. The result in the long run could be steeply falling prices.

"It will be no easy job to compete with Televerket and Comvik. We feel a bit like David up against Goliath. Nevertheless, it is an enormous challenge," said Flemming Orneholm.

**Long-awaited New Investment**

Nordic Tel means long-awaited new investment in a crisis-plagued corner of the country, the Karlskrona region. One year ago the business was established with Orneholm as the only employee. Today it has reached 50 employees, and in a few years, according to plan, the figure will rise to 300.

The sky is the limit. In 10 years GSM may have largely replaced all of today's cable-based telephone systems. What is expected now is a brass-kuckles war over market share in an entirely new market.

**Ericsson Foresees Growth in South America Sales**

92WT0153A Stockholm SVENSKA DAGBLADET  
in Swedish 6 Apr 92 p 41

[Text] "So far we have not suffered from lack of business," said Ericsson's director in Brazil, Bjorn Jonsson, who concedes, however, that the number of incoming orders has been thin in the past year.

With 5,500 employees, a nearly 100-year history in the country, and sales of approximately 2.5 billion kronor three years in a row, Ericsson Telecommunicaciones is a well-known business in Brazil with a strong lobby within the state and the government.

"I am certain that the government is going to appropriate more money for infrastructure. We are hopeful about the future," said Jonsson, who also sees excellent opportunities in the export of Ericsson products from Brazil to other South American countries.

**On the Stock Exchange**

Ericsson Telecommunicaciones is listed on the stock exchange in Brazil in contrast to other Swedish daughter companies in the country. The mother company, LM Ericsson owns 50.5 percent of the stock, the Brazilian company Matel owns 17 percent, while the rest of the shares are on the Brazilian open market. The Brasilian owners, however, have 51 percent of the votes in the company, as required by law.

Ericsson has over 45 percent of the market in telephone lines in Brazil, and 50 percent of all handsets are Ericsson manufacture. "We have installed a total of 4.5

million telephone lines in Brazil, a million with the AXE switching system," Jonsson disclosed.

Ericsson has been active in Brasil since the end of the last century. The first factory was established in 1924. "We are undoubtedly the largest business in the industry in Brazil."

**Contract in Many Countries**

In addition, Ericsson has made a contract to enlarge the telephone networks in Uruguay and Peru. In Bolivia and Surinam, the company will develop smaller projects.

The separate state administrations are still Ericsson's most important customers in Brazil. But this could change because most of the state-owned telephone companies are about to become privatized, which is expected especially to increase the demand for mobile telephony.

Jonsson rejects the idea that Ericsson should attempt to buy in and become part owner of the privatized South American companies.

**Ericsson Hoping for Big Contracts From Spain**

92WT0165B Stockholm DAGENS NYHETER  
in Swedish 27 Apr 92 p C 1

[Article by Thomas Lerner and Torbjorn Spangs: "Ericsson Expects Boost in Spanish-Speaking Countries"]

[Text] The Olympic Games in Barcelona and the World's Fair in Seville may provide a much-needed boost for telecommunications giant Ericsson on the Spanish market.

Raimo Lindgren, CEO for Ericsson's Spanish subsidiary, harbors great hopes for future export opportunities to Latin America.

"One of the reasons is that Spain is able to offer so-called soft loans for exports to the South American countries," said Raimo Lindgren.

Two years ago Ericsson sold, to Spain, telecommunications equipment valued at a total of 5 billion kronor. This amounted to more than one-tenth of the group's gross sales.

This year, management projects that gross sales will decrease to 3 billion kronor. The reason for this is that the Spanish telephone company Telefonica has drastically reduced its investments as a result of decreased demand and temporary financial problems.

**Overheating**

Raimo Lindgren is hoping within two years to be back at the old level. He also believes in continued positive development in Latin America, where Ericsson's Spanish subsidiary has already made some major inroads into Chile and Argentina.

"At least one-fifth of Ericsson's gross sales should be generated in Spain and Latin American countries," Raimo Lindgren added.

The Spanish labor market problems and the overheated speculation economy are obstacles in achieving this goal. He also complained of low employee turnover within the company. This probably sounds somewhat peculiar to a Swedish executive.

"The average employee age is 45 years, and this is way too high," said Raimo Lindgren.

An important reason for the low employee turnover is the unemployment rate in Spain, which is high according to European standards. Another explanation is the legacy of the dictator Franco.

"He bought peace on the labor market by means of a number of laws which make it difficult to conduct business in the modern world. The result is a rigid labor market," stated Raimo Lindgren. The large number of conflagrations is due to the inclination of the members of the employer's joint labor negotiation organization to toe the various party lines, and the fact that the labor unions are divided into two separate political factions.

#### Half Speed

Ericsson's Spanish subsidiary has a total of 3,500 employees. Raimo Lindgren wants to get rid of about 500 of them. This is due not only to the fact that the factories are running at half speed, but also because of the technological development, which allows telephone exchanges and other equipment to be manufactured faster than before.

Ericsson is not the only company in trouble. The entire Spanish industry is facing rough seas. The economic development of the country has led to an increase of salaries and wages at a faster pace than inflation. In addition, the overvalued currency, the Spanish peseta, and high interest rates have resulted in a strong flow of currencies into the country.

"But the influx of currencies has not been used for productive investments to any significant extent, but has instead been used in various speculative endeavors," stated Raimo Lindgren.

In order to restore balance in the Spanish economy, the country's government must take a firm grip on the reins. But he thinks this will be difficult, considering next years elections.

Companies which are active in Spain, are therefore expecting a lot from the Olympic Games in Barcelona and the World's Fair in Seville.

Ericsson is the main sponsor of the Swedish exhibition pavilion, which will hopefully attract visitors.

#### Linking Arenas

During the Olympic summer games, Ericsson is in charge of internal telecommunications between the various competition sites. In addition, all international phone calls, to and from Barcelona, are connected using Ericsson's AXE-exchanges.

"Even if we are not investing large amounts, both the Olympic Games and the World's Fair are of importance from a PR standpoint," added Raimo Lindgren.

Raimo Lindgren has been CEO for Ericsson in Spain for three years now. He has previous experience in, among other countries, both Mexico and Colombia.

Ericsson's marketing people occupy centrally located offices in Madrid. Raimo Lindgren, on the other hand, has chosen to remain in his large sunny office, next to the factory in Leganes, just south of the capital.

He feels he has a lot of freedom within a certain framework, regarding marketing questions and budget, among other things, but is also pushed hard by the management for the group at home in Sweden.

"We have a cumbersome and important budget process in the Ericsson group. We have had to learn from our failed investments in data and information systems, about 10 to 15 years ago. Those days management did not possess the perspective which is important in order for a global company, such as Ericsson, to succeed," concluded Raimo Lindgren.

#### Ericsson Heading for Record Annual Loss

92WT0165A Stockholm DAGENS NYHETER  
in Swedish 8 May 92 p 32

[Text] Swedish telecommunications giant Ericsson posted a 363-million-kronor loss during the first three months of the year. This is compared with a profit of one billion kronor during the same period last year.

The loss is larger than what even the most pessimistic analysts had earlier predicted.

The reason for the substantial loss is lowered sales in many of the Ericsson Group's most important markets. Many public phone companies are keeping a low profile during the world wide recession, and are holding off on making any purchases.

In spite of the record loss, Ericsson continues to invest heavily in research and development.

The Ericsson Group's gross sales during the first quarter of this year, amounted to over 9.4 billion kronor. This means a decrease of 11 percent compared to the same period last year.

On the other hand, there was an increase in new orders of 22 percent, or 13 billion kronor. This is explained by the fact that many orders which were expected during 1991 did not come in until this year. In addition there was a strong increase in orders for mobile telephone equipment.

It is unlikely that telephone companies all over the world are going to drastically increase their orders during the rest of the year. Ericsson's management therefore estimates the first half of 1992 to be very weak and that the profits for all of 1992 will remain small.

Since the beginning of this year, the number of employees of the Ericsson group of companies has dropped by 1,800 persons and the total number of employees today is 69,400. According to company management, the rationalisation program which was started earlier, is going to come into full effect during the second half of the year.

Lars Ramqvist, CEO for the Ericsson Group, believes that the investments the company has made in tomorrow's technology will bear fruit. Today there is already an increase in orders for mobile telephone systems and terminals.

### Ericsson's 1991 Results Presented

*92WS0499E Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE  
in English 23 Mar 92 pp 17-18*

[Text] As expected, due to the continuing recession worldwide, Ericsson's 1991 pre-tax income fell 67 percent to SKr1,604 million from 1990's level of SKr4,855 million. The figure for 1991 included a charge of SKr835 million that was allocated for future restructuring costs. Net capital gains, after deduction for minority interests, accounted for SKr229 million of pre-tax income versus SKr112 million in 1990.

Income net of taxes declined 76 percent to SKr760 million from SKr3,149 million. Income per share, after actual taxes paid and after full conversion, was SKr3.69 against SKr14.66.

Consolidated net sales in 1991 totaled SKr45,793 million, just up on 1990's level of SKr45,702 million. Of 1991's total 87 percent of sales went to customers overseas compared with 88 percent a year earlier. Order bookings decreased 9 percent to SKr44,758 million from SKr49,371 million and order backlog at year-end was SKr28,777 million compared with SKr30,415 million.

#### Sales by Business Area (SKr Millions)

	1991 Total	1991 (External)	1990 Total	1990 (External)
Public Telecoms	21,924	19,517	22,614	20,414
Radio Communications	12,371	12,276	11,693	11,564
Business Communications	4,870	4,720	4,922	4,781
Cable and Network	7,022	6,506	6,795	6,484
Components	2,214	985	1,905	589
Defence Systems	1,825	1,611	1,890	1,758
Other Operations	1,023	178	789	112
Less Intersegment Sales	-5,456	0	-4,906	0
Total	45,793	45,793	45,702	45,702

The three percent decline in the Public Telecommunications sector was due mainly to a much lower level of capital spending in the Spanish market, Ericsson said.

The deferral of orders in a number of other markets was also a factor in the decrease. Gains were recorded notably in the United States, the People's Republic of China and Argentina.

The Radio Communications area increased its sales mainly in the mobile telephone systems sector in the U.S., Italy, Germany and Malaysia. Sales were lower in Canada, Australia and the UK.

The 1 percent in sales by the Business Communications sector was due primarily to reduced demand for telephone instruments and small subscriber exchanges, but sales of the MD110 subscriber exchange systems and data networks were higher. Sales in the German market were particularly strong.

The Cable and Network division reported a 3 percent increase in sales, attributable mainly to the Italian, Thai and Turkish markets. Sales in Sweden declined, however.

Sales of power supply components in the Components business area were higher, as a result of the transfer to operations in Spain and Mexico from Public Telecommunications. Sales of microcircuits fell.

#### Sales by Geographic Area (SKr Millions)

	1991	1992	% Change
Sweden	5,831	5,509	+5.8
Europe, excluding Sweden	20,077	21,563	-6.9
U.S. and Canada	5,819	5,936	-2.0
Latin America	5,779	5,441	+6.2
Africa	667	866	-23.0
Middle East	1,750	1,200	+45.8
Asia	3,947	2,685	+47.0
Oceania	1,923	2,502	-23.1
Total	45,793	45,702	+0.2

Consolidated operating income after depreciation was SKr2,291 million, a 60 percent drop in 1990's operating income of SKr5,694 million. Ericsson said its share in earnings of associated companies decreased from SKr300 million to SKr87 million, primarily due to the weaker economy in the Brazilian market. General expenses rose sharply, the company noted, mainly due to major technical commitments in the business areas for telecommunications systems.

Total selling, research and development, general and administrative expenses reached SKr19,892 million in 1991, an increase of 20 percent on 1990's expenses of SKr16,543 million.

In the future, Ericsson will combine the operating results of its Public Telecommunications, Radio Communications, Business Communications and Components business sectors under a new heading of Telecommunications Systems. This is because operations in these

business areas are, to an increasing extent, interrelated. "Common technologies are utilised to a substantial degree and the systems being marketed often include components and products from several business areas. As a result, a division of their operating results does not provide a proper view of operational developments," the company said.

**Operating Income by Sector (SKr Millions)**

	1991	1990	1989
Telecommunications Systems	1,940	5,085	4,625
Cable and Network	434	580	350
Defence Systems	118	35	-46
Other operations, capital gains, general expenses and eliminations	-201	-6	-372
Consolidated total	2,291	5,694	4,557

Ericsson's total expenditures for research and development, including costs related to customer orders, increased sharply from SKr4,901 million in 1990 to SKr7,054 million in 1991, equal to 11 percent and 15 percent of sales, respectively. Total technical development costs, which also include costs of adapting systems and products to specific markets, similarly rose steeply to SKr10,326 million, or 23 percent of sales in 1991 from SKr7,874 million, or 17 percent of sales a year earlier.

Capital expenditures for property, plant and equipment in 1991 totaled SKr3,583 million versus SKr3,448 million the previous year. Of these amounts, investments in Sweden came to SKr1,367 million in 1991 and SKr1,314 million in 1990.

## SWITZERLAND

### Government Deregulates Service as of 1 May

92WT0173D Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 13 Apr 92 p 6

[Text] From the beginning of next month, a new regulatory regime will be adopted in Switzerland, an EFTA member-country, as the country's government tries to bring the telecommunications operating environment in-line with those legislated for member countries of the EEC. Measures similar to those being adopted in Switzerland are being taken throughout the EFTA countries.

On 25th March, the Federal Council adopted regulations which determine how the new Telecommunications Act will be implemented. The regulations cover the concession of licences, telecommunications services, customer premises installation and equipment and radio-communications.

A new regulatory body has also been established to separate the regulatory affairs from operational activities previously conducted by PTT Suisse, the nation's telecommunications operator.

The Telecommunications Act, approved by Parliament on 21st June 1991, whilst leaving the monopoly status of the PTT unchanged, has redefined the state's role in service provision.

The PTT's responsibility is now confined to the basic services of message transmission and switching (telephony, telex, packet-switching). Value-added services—over leased circuits or radio networks—have been deregulated and although the PTT can offer such services it must do so under competitive conditions.

Likewise the supply and installation of subscriber equipment has been liberalised, although only equipment approved in accordance with European standards can be sold and connected to the network.

PTT Suisse has retained, and will exercise, the right to install and operate telecommunications networks, either acting alone or in conjunction with third parties. Alternatively, the PTT can transfer the right to other organisations by means of licences.

The new regulatory environment will be applicable from 1st May.

A regulation covering the approval procedure as pertains to installation of telecommunications equipment was also approved. The regulation refers to legislation passed on the 30th October 1991 which governs the Swiss system of accreditation of test laboratories and certification bodies in the industrial sector. The new Office Federal de la Communication (Ofcom) has been created as the approvals authority and will administer regulations pertaining to type-approval.

With respect to customer premises installation, Ofcom and PTT Suisse must agree on where the network infrastructure stops and the customer premises network may begin. PTT Suisse is still solely responsible for issuing technical details on how the interconnection may be made. Ofcom officially became open for business on 1st April 1992.

Ofcom, however, will only be able to issue licences in sectors of the market that have been opened to competition—primarily, customer premises installation, value-added data and network services, message transmission and certain restricted areas of radiocommunications services. And, although the provision of leased circuits will remain the monopoly of PTT Suisse, the denial, blocking and suppression of circuits to third parties will be under the control of Ofcom.

Ofcom will also be responsible for the granting and revocation of concessions for the use of terrestrial radio links and satellite communications links for

third party services. It also has control over concessions for radio links allowing applicants to use, in Switzerland, both telecommunications services which are provided outside the territory of another country or satellites that Switzerland has no rights to use.

PTT Suisse will be responsible for granting all other concessions (such as for radiocommunications for general and professional use, line concessions, for the installation of radio communications equipment etc.).

The regulations covering the concession of licences define terms used for telecommunications networks, giving in detail definitions of the network monopolies of PTT Suisse and those networks that are excepted from the monopoly and defines the rules governing the interconnection of private networks to public networks.

The obligation undertaken by PTT Suisse to provide services in all parts of the country is to be covered by the regulations covering the provision of telecommunications services and covers telephony services, telex services, public call box provision and, until 31st December 1994 videotex services and the 111 information service.

## TURKEY

### Company Head on Private Kurdish TV Station NC0205155992 Istanbul CUMHURIYET in Turkish 9 Apr 92 pp 1, 16

[Text] Ankara, 9 Apr (MAK NEWS AGENCY)—A private Kurdish television station will be established with a capital investment of 400 billion Turkish lira. The Amid Journalism, Printing, and Publishing Company in Diyarbakir, which publishes the local newspaper SOZ, has taken steps to establish a regional Kurdish television station. Company General Director Halit Tunc said: "We have begun our work with an investment of 400 billion [Turkish lira]. This amount may be increased if necessary."

Noting that the Kurdish television station will also carry programs in Turkish and Arabic, Tunc explained that the station's policy will be to carry programs "in Kurdish based on Kurdish traditions and customs and not on the official ideology in the country." He also said that trying to see the Kurdish Workers Party [PKK] behind the work being carried out will be meaningless. Tunc asserted: "PKK Leader Abdullah Ocalan may appear on our screen if necessary. We did not ask the PKK's approval when we began our work. Nor did we ask for its support."

Tunc said they plan to have transmitters on Agri and Karacadag Mountains in order to broadcast to 19 provinces in eastern and southeastern Turkey. The telecasts also will be received in Syria, Iraq, and part of Iran.

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